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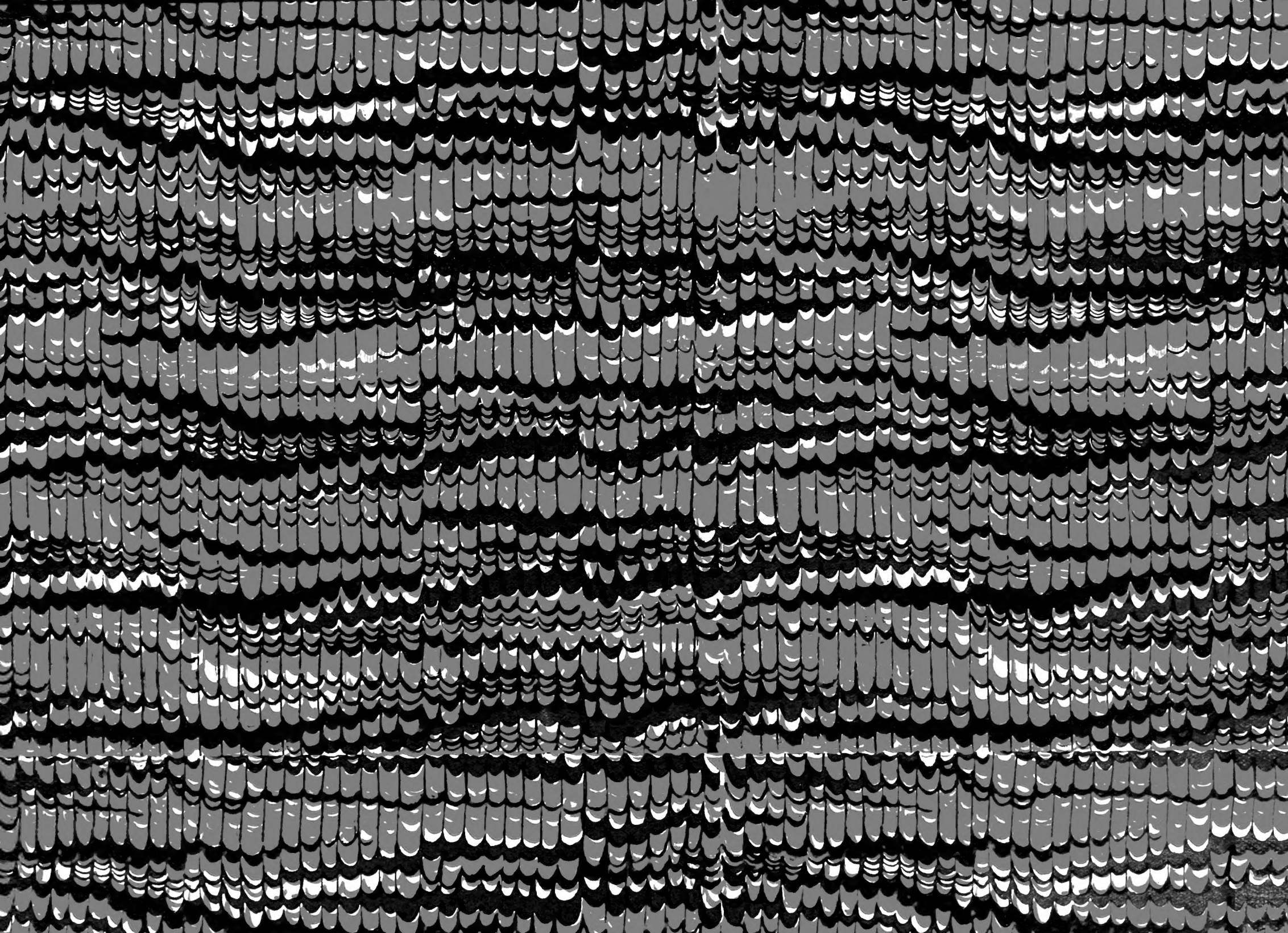

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TRANSACTIONS

OF

THE ZOOLOGICAL SOCIETY OF LONDON.

Boulenger
Sce. Contrib. Knowl. Wa
(Sac. muralis)
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(Plates XVI.–XXIII.)

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Continued on page 3 of Wrapper.

III. *Second Contribution to our Knowledge of the Varieties of the Wall-Lizard* (Lacerta muralis). *By* G. A. Boulenger, *F.R.S., F.Z.S.*

(Received May 6, 1912; Read May 21, 1912.)

[Plates XVI.–XXIII. and Text-figures 1–4.]

In pursuance of the plan followed in the paper published in these Transactions in 1905 *, I will now deal with the Lizards of South-Eastern Europe and the adjacent parts of Asia, thus bringing to a completion the account of the various forms of *Lacerta muralis* so far as the material at my disposal will permit. But as I have continued to amass material from the parts of Europe dealt with in the first contribution, I will first add supplements embodying the results of an examination of such material as seems likely to advance our knowledge.

The hope which I expressed that Dr. Werner, Dr. Lehrs, and Prof. L. von Méhely would bring out the results of their investigation of the Eastern forms of this difficult group of Lizards has only been partly fulfilled by the last author, and I do not think it desirable to wait any longer. Dr. Werner has for the present abandoned his intention, and most generously handed over to me, for description, his valuable collection, on which I have largely drawn, and he has further allowed me to keep duplicates for the British Museum. I wish to express publicly to him my hearty thanks. Much further help in various directions has been received from Dr. de Bedriaga and Count Peracca. A visit to Florence last winter, in company with Count Peracca, has enabled me to survey rapidly the beautiful collection, from all parts of Italy, brought together by the late Prof. Giglioli, to whose successor, Prof. Giglio-Tos, I beg to convey my thanks for facilities granted on that occasion.

My thanks are also due to Prof. Ehlers, of Göttingen, for the loan of the types of *L. hieroglyphica*, and to Dr. Gaillard, of Lyons, for the loan of Lizards from Asia Minor and the Caucasus.

The discussions which have arisen between Prof. Méhely and myself concerning the characteristics and relationships of these Lizards have appeared in the following publications:—

L. v. Méhely.—Zur Lösung der 'Muralis-Frage'. Ann. Mus. Hung. v. 1907, p. 84.

G. A. Boulenger.—Remarks on Prof. L. von Méhely's Paper "Zur Lösung der 'Muralis-Frage'." Ann. & Mag. N. H. (7) xx. 1907, p. 39.

L. v. Méhely.—Archæo- und Neolacerten. Ann. Mus. Hung. v. 1907, p. 469.

* Tr. Zool. Soc. xvii. p. 351.—For brevity's sake, this paper will be quoted as Tr. 1905.

L. v. Méhely.—Materialien zu einer Systematik und Phylogenie der Muralis-ähnlichen Lacerten. Op. cit. vii. 1909, p. 409.

G. A. Boulenger.—Remarks on Prof. L. v. Méhely's recent Contribution to the Knowledge of the Lizards allied to *Lacerta muralis*. Ann. & Mag. N. H. (8) v. 1910, p. 247.

L. v. Méhely.—Weitere Beiträge zur Kenntniss der Archæo- und Neolacerten. Ann. Mus. Hung. viii. 1910, p. 217.

See also remarks by E. G. Dehaut, Bull. Soc. Zool. France, xxxvi. 1911, p. 8.

Prof. Méhely does not need my praise, but I should like to say that, however much I differ from him in the taxonomic appreciation of characters, in the conception of species and their probable derivation, as well as in matters of nomenclature, I have the greatest admiration for the originality and energy displayed in his painstaking investigations and for the accuracy of his illustrations. I can only regret that I am unable to accept the conclusions reached by him in his praiseworthy attempt to settle a difficult problem.

It is my object, by a mere statement of facts, accompanied as far as possible by photographic representations of the specimens, to re-act against the tendency to exaggerate the importance of trivial or inconstant characters such as are adduced to justify the splitting up of *Lacerta muralis* into a score or more of so-called species.

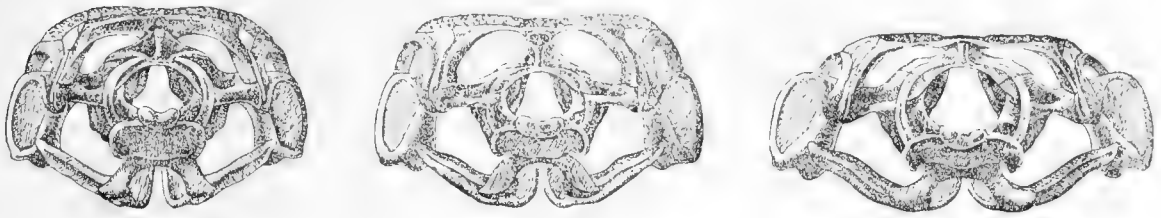
Although I have examined a great number of skulls, which have been prepared and studied by Mr. E. Degen, I do not propose dealing with them here, as I feel convinced they do not afford any help out of the difficulties. As I said on a previous occasion (1907), skulls of Lizards cannot be extracted as is done in the case of mammals; preparing the skull means the partial destruction of the specimen, and in a discussion of this kind, dealing mainly with individual variations, annectant examples cannot always be sacrificed. We are not much the wiser when the skulls have been prepared, as the characters pointed out by Prof. Méhely are, for the most part, correlative of the degree of elongation or depression of the head, which can be appreciated without injuring the specimens. Alluding to the author's two extreme skulls (*L. fiumana* and *L. bedriagæ*) figured in his paper of 1907 and reproduced here (text-fig. 1 A & C), I added that I could easily lay out a series that would to such an extent bridge over the differences as to show of how little practical value they are for the definition of species. This demonstration has been furnished by Prof. Méhely himself, who, in his paper of 1909, gives occipital views of two skulls of *L. bedriagæ* which contradict his previous statement that a pyramidocephalous skull (text-fig. 1 A) is distinguished by a "Processus ascendens des Supraoccipitale hoch und kräftig" from a platycephalous in which it is "schwach und niedrig."

Text-fig. 1 B, published in 1909, entirely destroys the impression conveyed by the two extreme types (text-fig. 1 A & C) represented in 1907 with the object of showing one of the principal differences between a pyramidocephalous skull and a platycephalous.

In this contribution, as in the preceding one, I have, as a rule, abstained from theories

and confined myself to statements of facts. Such statements, presented in an unbiassed spirit, are, I believe, what are most needed at the present moment. Although to a great extent destructive from a taxonomic standpoint, I do not think the labour bestowed on such an investigation has been wasted, as the checking on a large

Text-fig. 1.



A. *Lacerta fiumana*; B and C. *L. bedriagæ*: after Méhely.

material of several characters, to which undue importance has recently been ascribed, results in a much more precise knowledge of the individual variations and local varieties than we would otherwise acquire of such a widely distributed and polymorphic species as *Lacerta muralis*. I therefore believe that the controversy which has been going on, and which will probably continue for some time, between Prof. Méhely and myself, is not only to the advantage of systematic herpetology, but constitutes a useful contribution towards the solution of the problem of species.

This paper was read before the Zoological Society on May 21, 1912, but as several months have elapsed between that date and that of setting up in type a few additions to the MS. have been made in the meantime (Sept. 10, 1912).

A list of the specimens preserved in the British Museum collection is appended (pp. 206–214).

I.—CENTRAL EUROPE (Supplement).

Forma typica.

The species *Lacerta muralis* was first described by Laurenti from the neighbourhood of Vienna. In my preceding contribution, I mentioned two specimens as topotypes from that part of Austria, and pointed out that one is highly aberrant in several respects,—larger scales, absence of the anterior supraocular, and abnormal division of the parietal shields by a transverse cleft (see Tr. 1905, pl. xxv. fig. 4). Having since inquired from Dr. Werner as to whether he had other examples from the same locality (Vöslau, near Baden, Lower Austria), I was greatly surprised to hear that an examination of his material had satisfied him that this division of the parietal shields, instead of being anomalous or accidental, is the rule in Lower Austria.

Among his specimens from Mödling, Baden, Vöslau, Reichenau, and Miesenbach, not one is without at least an indication of it, whilst he could not find such a thing in any of his Wall-Lizards from various other parts of Europe.

Dr. Werner has been so kind as to send me living specimens from Baden and Vöslau, particulars of which are given in the following tabulation, along with the specimens preserved in his private collection (W.) which he has allowed me to examine.

			1.	2.	3.	4.	5.	6.	7.
	Baden	♂	60	53	24	9	22	15	23
W.	„	„	59	52	24	9	24	17	23
	„	„	56	50	24	10	21	15–16	25
	„	♀	55	46	26	8	19	16	23
	Vöslau	♂	59	50	24	9	23	19–18	24
W.	„	„	58	46	24	9	22	16	24
	„	„	38	50	24	9	23	18–16	22
	„	♀	57	48	27	9	26	16	25
W.	Mödling	♂	45	47	25	8	23	19–16	24
W.	Reichenau	„	45	47	25	10	21	16	22
W.	Pernitz	„	53	49	24	10	24	18	24
W.	Miesenbach	„	59	52	23	8	26	18	24

1. Length (in millimetres) from snout to vent. 2. Number of scales across middle of body. 3. Transverse series of ventral plates. 4. Number of plates in collar. 5. Number of scales and granules between symphysis of chin-shields and median collar-plate. 6. Number of femoral pores (on right and left sides, if differing). 7. Number of lamellar scales under the fourth toe.—The same notation is followed throughout in this paper.

The division of the parietal is complete on both sides in 3 specimens, complete on one side and incomplete on the other in 6, incomplete in the rest. The anterior supraocular is absent in the specimen from Reichenau. One of the specimens from Vöslau has two postnasals, and in another from the same locality (Pl. XVI. fig. 4) the parietal does not touch the upper postocular *. One of the specimens from Baden has only three anterior upper labials. In all of them the second supraocular is in contact with the supraciliaries.

* In my previous contribution I have carefully recorded such exceptions to the rule on account of Prof. Méhely's statement (Ann. Mus. Hung. ii. 1904, p. 368, footnote), "Ich habe z. B. viele hunderte von sehr verschiedenen Fundorten herstammende Exemplare der *Lacerta muralis*, *L. vivipara* und *L. taurica* untersucht und niemals ein Exemplar angetroffen, bei dem das erste Postoculare [upper postocular] nicht an das Parietale angestossen hatte." Now, it is very remarkable that when I examine scores instead of hundreds of specimens of the typical form, I come upon such exceptional specimens. I have previously mentioned six from France (Tr. 1905, p. 354), I now add one from Austria, and further on I record another from France and 23 from Spain, which makes 31 exceptions out of about 260 specimens, or 12 per cent.

The female from Vöslau is remarkable in having a paired series of dark vertebral spots. Males with the throat and belly red, or cream-colour with rust-red spots; black ventral spots, if present, confined to the two outer rows of shields, the outermost of which bears large pale blue spots. Females white beneath, with golden sheen; small pale blue spots on outer row of ventral shields.

It will be noticed that the number of scales across the body is generally less than in specimens from France and Belgium. In my previous contribution, particulars of 8 specimens from Dinant, Belgium, showed the number to vary between 54 and 62. I have since obtained, with the kind assistance of a young friend, A. van Delft, numerous specimens from a quarry at Denée, not far from Dinant, and the tabulation of 12 specimens confirms this range of variation.

		1.	2.	3.	4.	5.	6.	7.
Denée, Belgium	♂	61	54	25	11	27	19	26
,, ,, ...	,,	60	57	23	11	22	20–19	24
,, ,, ...	,,	57	59	24	10	26	21–19	25
,, ,, ...	,,	57	56	25	11	24	19–21	26
,, ,, ...	,,	52	55	25	10	24	18–19	25
,, ,, ...	,,	50	57	24	9	26	18–19	25
,, ,, ...	♀	62	55	27	10	25	18–19	24
,, ,, ...	,,	55	54	27	10	27	20–22	27
,, ,, ...	,,	53	55	27	10	23	18	25
,, ,, ...	,,	53	54	27	9	25	20–19	23
,, ,, ...	,,	52	58	26	9	24	19–18	23
,, ,, ...	,,	50	55	28	9	26	19–20	25

In three of these specimens the series of granules between the supraoculars and the supraciliaries is complete. In five the suture between the first and second supraciliaries is vertical, at least on one side. One specimen has five anterior upper labials on one side. In both sexes the lower parts were white or pale pink in life; blue spots on the sides large or small in males, small or absent in females.

Baron G. Fejérváry, Jun.*, has published some remarks on specimens from the Rhone Valley in Canton Vaud, Switzerland, figuring the rostral scutellation of a specimen which agrees closely with one found near Randa, noticed on p. 353 (right-hand figure) of my first contribution, and he also records specimens with as many as 62 scales across the body.

I have also further remarks to offer on the variations of this lizard in France.

Prof. L. Vaillant †, in announcing the very interesting find of two specimens of bluish-black Wall-Lizards on one of the Glenan Isles, on the Atlantic coast of Brittany,

* Beitr. Herpet. Rhônetals, 1909, p. 40.

† Bull. Mus. Paris, 1906, p. 438.

records them under the name of var. *lilfordi*. I have not seen these specimens, but I have no doubt that if they were examined as to their scaling they would be found to agree entirely with the typical form, which grows to a large size on the Glenan Isles, whilst the true var. *lilfordi*, from the Balearic Islands, can be recognised at once by its much smaller scales. I have exhibited before one of the meetings of this Society * a totally black individual of the typical form from near Florence, apparently similar to others from Bordeaux and the Italian Lakes district, reported upon by Lataste † and by Kammerer ‡, thus showing that these black so-called varieties are not, as generally believed, only produced by isolation on small rocks.

Basing likewise his identification on colour and markings, M. M. Mourgue § has recorded the vars. *nigriventris* Bp., and *latastii* Bedr., from the Riou Isle, off Marseilles. But the specimens he has been so kind as to send me, proved, as I expected, to belong to the typical form. I append particulars of these two specimens:—

	1.	2.	3.	4.	5.	6.	7.
♂	62	56	26	10	24	19	26
,, ...	60	52	25	8	23	18–19	25

Now, the var. *nigriventris*, from Rome (see Tr. 1905, p. 384), has 55 to 71 scales across the body, and 27 to 31 lamellar scales under the fourth toe, and the var. *latastii* (var. *serpa*, from Ponza, p. 397), 66 to 71 of the former, and 30 to 33 of the latter.

I have before me a large male specimen from St. Lunaire, near St. Malo (Pl. XVI. fig. 1), which still more resembles in its coloration the var. *nigriventris* of Italy. Its upper parts are black, with numerous round lemon-yellow spots, and the pinkish-white belly is spotted with black. It is further remarkable in having the anterior nasal in contact with the anterior loreal, above the posterior nasal. Along with its particulars I give those of a female specimen from the same locality, which has a large transverse shield in front of the anal, and a round black spot on almost every ventral shield (Pl. XVI. fig. 2).

		1.	2.	3.	4.	5.	6.	7.
St. Lunaire	♂	72	60	27	10	27	22–23	23
,, ...	♀	67	53	30	9	24	21–22	23

Here, again, the low number of subdigital lamellæ (23) shows that this lizard cannot be referred to the var. *nigriventris*, however much it may resemble it in coloration and in size. The latter agrees exactly with that of the Glenan Isles specimens (*l. c.* p. 357), which were hitherto regarded as among the largest of the typical form. As size is

* P. Z. S. 1905, ii. p. 324.

† Herp. Gironde, p. 76, 1876.

‡ Zentralbl. f. Physiol. xx. 1906, p. 261.

§ Feuille des Jeunes Naturalistes, xxxix. 1909, p. 250; and xl. 1910, p. 87, figs.

sometimes appealed to in justification of specific distinction among the Wall-Lizards, it is worthy of note that the typical form, which ranks as a small race, on an average may reach a length of 72 mm. without the tail in both sexes, whilst in the largest Wall-Lizards examined by me this length does not exceed 90 mm. in males (var. *serpa*), and 82 in females (var. *bedriagæ*), such specimens being regarded as exceptionally large.

The female is remarkable for the very short and broad, nearly smooth caudal scales.

A male specimen caught at Achard, near Bordeaux, by Mr. Edward Britten, and presented by him to the British Museum, is remarkable for having the anterior nasal in contact with the loreal, and the anterior temporal reaching the upper surface of the head and broadly in contact with the fourth supraocular (Pl. XVI. fig. 3).

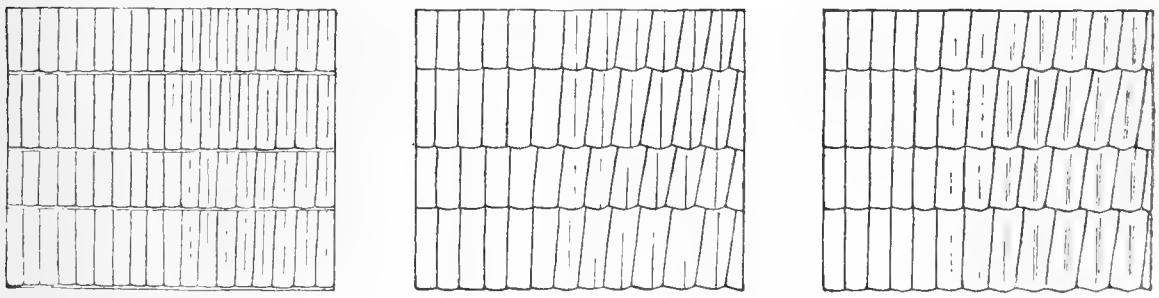
	1.	2.	3.	4.	5.	6.	7.
Achard . . . . . ♂	60	52	25	11	20	19	24

It has 5 upper labials on the right side, 4 on the left.

I have represented the caudal scales of three specimens of the typical form to show to what extent their shape and degree of keeling may vary according to individuals, and in order to warn against such a character being used for the definition of species. In other forms I have observed similar individual differences, though perhaps not to the same extent.

These scales are taken from the left half of the posterior part of the anterior fourth of the intact, unreproduced tail.

Text-fig. 2.



Caudal scales of *L. muralis*.
A, B. Denée, Prov. Namur, Belgium; C. Baden, near Vienna.

Sensory pits near the posterior border of the caudal scales are often very distinct in the typical *L. muralis*.

I have already expressed my agreement with Eimer's theory as to the modifications of the pattern of markings in these lizards, viz., that the longitudinally streaked forms

(*striatæ*) are the most primitive, from which first the reticulated (*reticulatæ*) and then the cross-barred (*tigris*) were derived; and that the gradual changes have proceeded, first in males and then in females, from behind forwards, the tail therefore being in the most advanced condition, unless following another independent tendency, viz., the suppression of markings (*concolores*). The Wall-Lizards of the series commencing with the typical form and terminating in the var. *nigriventris*, with the var. *bruggemanni* as intermediate form, show this very well, and I have therefore on Pl. XVI. given side-views of the tails in three specimens (figs. 8–10), showing the passage between two extremes:—

Fig. 8. Striated female (Bosnia), showing the retention on the tail of the dark lateral stripe, with a tendency to break up into spots; on the reproduced part, this lateral stripe has, as usual on the regenerated tails of *L. muralis*, resumed its continuous condition.

Fig. 9. Reticulated male (Bosnia) with the markings in the form of vertical bars.

Fig. 10. Male of var. *nigriventris* (Rome), in which the last condition reaches its highest degree in *L. muralis*, the bars sometimes even forming complete annuli.

Similar series can be traced in the vars. *campestris* and *serpa*.

II.—SPAIN (Supplement).

Forma typica.

Wall-Lizards, in every respect similar to those of France, occur near Madrid, in the Loroya Valley, whence the British Museum has received 25 specimens from M. de la Escalera. The var. *bocagii* occurs also in the same valley (see p. 144). Particulars are given of a few of these specimens.

	1.	2.	3.	4.	5.	6.	7.
♂	69	56	24	10	24	18	24
,,	63	60	25	9	25	20–19	26
,,	60	55	23	9	22	16–17	26
,,	56	56	25	9	24	17–18	27
♀	65	60	28	9	26	18–17	25
,,	62	58	28	10	23	17	25
,,	60	48	27	9	24	18–17	23
,,	58	56	27	9	23	15	23

Of the 25 specimens, 9 may be regarded as conforming in every respect to the normal pattern of scaling. Others deserve to be noted for the following peculiarities:—

One has no indication of a masseteric disk, two have it very small on one side,

absent on the other. In 8 specimens the parietal does not touch the upper post-ocular, in 4 it does so on one side only. In one the suture between the first and second supraciliaries is vertical. In two the anterior nasal is in contact with the anterior loreal. Two have 3 labials anterior to the subocular on both sides; a third has 3 on one side and 4 on the other. The series of granules between the supraoculars and the supraciliaries is often complete. The occipital is frequently a little broader than the interparietal. The scales on the body are usually feebly but more or less distinctly keeled.

Belly more or less spotted with black in the males. Sixteen specimens have the dark vertebral stripe or series of spots.

The British Museum has also received, from Dom Saturio Gonzales, a large series (26 ♂, 20 ♀, 65 young) from Silos, Burgos, and a few specimens from Castrillo de la Reina, also in Burgos, which I refer to the typical form.

	1.	2.	3.	4.	5.	6.	7.
♂. Silos	60	52	27	9	27	17	26
,, ,,	59	52	28	10	25	17	25
,, ,,	59	52	26	9	26	17–18	23
,, ,,	55	48	26	11	24	19	22
,, ,,	54	50	25	8	24	17	22
,, ,,	53	54	25	11	28	16	25
,, ,,	53	53	26	9	23	15–16	25
,, ,,	51	52	25	9	22	15–14	24
,, ,,	50	49	24	11	23	15	23
,, ,,	50	52	25	9	23	16–17	24
♀. ,,	51	50	29	9	22	14–13	22
,, ,,	50	48	29	11	23	17–16	26
,, ,,	48	50	29	9	23	16–18	20
,, ,,	47	46	28	9	25	16–17	23
,, ,,	46	48	29	9	24	15	22
,, ,,	45	48	30	9	22	14–13	23
,, ,,	45	50	31	9	23	17	22
,, ,,	42	50	30	9	23	15	21
,, ,,	40	49	30	10	24	15	22
,, ,,	40	48	30	9	20	16–15	21
♂. Castrillo de la Reina	64	51	27	9	27	20–19	?
,, ,,	61	50	26	11	23	17–16	25
,, ,,	57	46	26	10	24	17–16	21
,, ,,	53	50	27	9	22	16–15	26
♀. ,,	53	50	31	10	25	14–15	21
,, ,,	51	50	28	11	21	16	22

The scales on the body are usually perfectly smooth, rarely with a very feeble keel;

their number is comparatively low (46–54), and so is the number of femoral pores (13–18, only once 19–20).

In view of the undue importance that has been attached by L. von Méhely and others to certain characters of lepidosis, it will not be without interest to record their variation in this series of over 100 specimens.

The suture between the internasals is often very short, and in 5 specimens the rostral forms a suture with the frontonasal. The occipital varies much in size; in some it is very small, in others it is much broader and even longer than the interparietal. The suture between the first and second supraciliaries is vertical, at least on one side, in 28 specimens. The series of granules between the supraciliaries and the supraoculars is complete in 30 specimens *. In 9 specimens the parietal is not in contact with the upper postocular, and in 2 it is so on one side only. The masseteric disk is usually large, sometimes small, totally absent in 7 specimens; in 4 specimens it is separated from the last upper labial by a single granular scale. 4 specimens have five anterior upper labials on both sides, 9 have five on one side only.

Grey, olive-grey, or pale brown above, with black, brown, reddish-brown, or brick-red markings; two more or less distinct light streaks on each side, usually very sharply marked in females and young, with a dark band or dark spots between them; a vertebral series of small dark spots, sometimes confluent into a streak, more often absent than present. Lower parts red, pink, or white in females, salmon-pink or brick-red in males, in which latter a series of azure-blue spots is present on the outer row of ventral shields; black spots, if present, small. Tail of young often bluish.

Var. BOCAGII.

	1.	2.	3.	4.	5.	6.	7.
♂. Loroya Valley	65	59	29	9	28	17–18	26
,, ,,	63	60	28	10	25	18–17	23
,, ,,	61	55	26	10	23	16	25
,, ,,	60	62	26	10	27	18	27
,, ,,	57	61	27	10	26	19	26
,, ,,	53	65	28	11	27	19–18	26
♀. ,,	61	58	31	11	25	17–16	27
,, ,,	55	62	31	9	26	17–16	25

The first specimen on the list has 8 rows of ventral plates instead of 6, the normal number. Scales granular, smooth, or with faint keel; caudals more or less strongly keeled. Masseteric disk totally absent in two specimens, absent on one side in a third; in one specimen it is separated from the last upper labial on the right side by a single granule. With one exception, occipital broader than interparietal.

* This and the preceding character, given by Méhely in the diagnosis of the Archæolacertæ (1910, p. 224), thus occur in more than 25 per cent. of the specimens from this part of Spain.

Except for the absence of a vertebral stripe or series of spots, the larger specimens (♂), one of which is figured on Pl. XVI. fig. 11, are not without a general resemblance to the var. *pityusensis*, and such specimens have no doubt given rise to Bedriaga's remarks* on Seoane's var. *bocagii*: "Eine Übergangsform, welche die *pityusensis* und die *fusca* verkettet, ist mir neuerdings aus der spanischen Provinz Galizien zugestellt worden." On the other hand, the smallest male is on the way to the black, light-spotted attire of the Serra de Gerez specimen, figured by me in Tr. 1905, pl. xxiv. fig. 8. The females (Pl. XVI. fig. 12) are beautifully striped, an exaggeration of the pattern represented on pl. xxiv. fig. 7, of Tr. 1905. Belly unspotted in males as well as in females.

I am indebted to Dr. Gadow for several specimens collected by himself near Burbia, Asturias, between Galicia and Leon, one of which calls for notice as bridging over, to a certain extent, the chasm separating this variety from the var. *monticola*, of which specimens were obtained in the same neighbourhood.

I append its particulars:—

	1.	2.	3.	4.	5.	6.	7.
Yg. ♂	48	53	27	11	22	17	23

The internasals form an extremely short suture behind the rostral; the parietal just touches the upper postocular, and is slightly emarginate on its line of contact with the anterior supratemporal †; the masseteric disk is well developed, and is separated from the latter shield by one granule, and from the last upper labial by one granule on the left side and by two on the right; the first and second supraciliaries are in contact with the anterior supraocular ‡, and the suture between them is vertical, not oblique. The shape of the head does not differ from that of the var. *monticola*, but some of the specimens of the var. *bocagii* from Spain and Portugal have also the head much flattened. In the lizards from the Spanish Peninsula, it is impossible to draw a demarcation line between the pyramidocephalous and the platycephalous type, which culminates in the var. *hispanica*. I can predict that a larger series of specimens from that part of Spain would so completely link the vars. *bocagii* and *monticola* as to render the naming of certain individuals arbitrary.

Var. MONTICOLA.

My friend Dr. Gadow has presented to the British Museum two specimens of this variety, which Prof. Méhely has raised to specific rank, as he was bound to do if

* Abh. Senck. Ges. xiv. 1886, p. 255.

† As shown by fig. 13, on Pl. XVI., taken from a male specimen from Coimbra, in Dr. de Bedriaga's collection, the anterior temporal may be extensively in contact with the fourth supraocular in the var. *bocagii* as well as in the var. *monticola*.

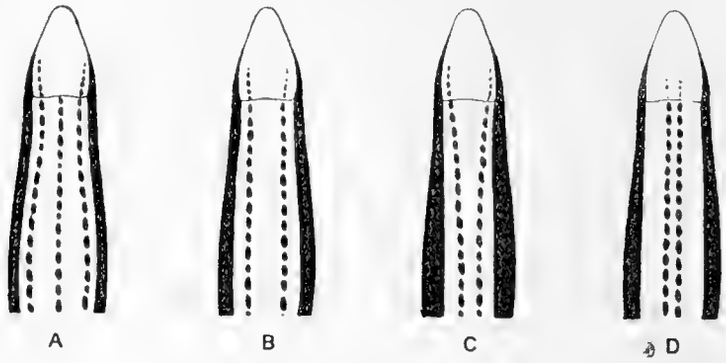
‡ I find exactly the same condition in a ♀ *L. horvathi* received from Prof. Méhely, the granules behind the second supraciliary being reduced to five.

L. horvathi is to stand as a species. In fact, one of these two specimens, obtained by Dr. Gadow at Burbia, Spain, and of which particulars follow, bears a most striking resemblance to *L. horvathi*. Both specimens are again females; the male of this variety is still unknown.

	1.	2.	3.	4.	5.	6.	7.
♀	70	52	29	8	26	15–14	23
„	64	50	28	9	23	18–17	26

The larger specimen, which is blotched with black on the back, the larger spots forming a pair of vertebral series, differs from the types in the lower number of femoral pores (14–15 instead of 17–20), in having the series of granules between the supraoculars and the supraciliaries incomplete, and in the absence of a masseteric disk, the temple being covered with small irregular shields. The parietal forms a short suture

Text-fig. 3.



A. F. *typica*. B, C. Var. *bocagii*. D. Var. *monticola*.

with the upper postocular. The smaller specimen, in which the back is olive-brown, with a few black dots, bordered on each side by a sharply-defined blackish-brown band, has the anterior loreal divided into two superposed shields, an azygous shield separates the præfrontals, the anterior supratemporal forms a suture with the fourth supraocular, and the posterior dorsal scales are feebly but very distinctly keeled. The temporal scutellation of this specimen (Pl. XVI. fig. 14) is interesting, as it reproduces the condition described by Prof. Méhely in *L. horvathi* (1909, p. 602): "Es ist von hervorragender Wichtigkeit, dass das Massetericun *tief unten liegt* und während es vom Supratemporale meist durch *zwei* Schildchen getrennt wird, stosst es mit dem nächsten Supralabiale *oft zusammen*, oder es wird von demselben höchstens durch *ein* Schildchen getrennt; ein ähnliches Verhalten ist mir von keiner anderen *Lacerta* bekannt"*. The scutellation of the lower surface of the tibia corresponds to Méhely's figure on pl. xxiv. fig. 3.

* See further on, p. 148 (var. *brueggemanni*).

I have no hesitation in stating that there is not a single structural character, or combination of characters, by which *L. monticola* can be distinguished from *L. horvathi*. But, whereas the former is a mountain form probably derived from the var. *bocagii*, with paired series of spots on the vertebral line, the latter should be regarded as a mountain form derived from the typical *L. muralis*, with a single series of spots, often confluent into a streak, on the vertebral line *. The difference between *L. monticola* and *L. horvathi* is much less than that which separates *L. sardoa* from *L. bedriagæ*.

III.—ITALY (Supplement).

Forma TYPICA.

I am indebted to Prof. O. Neumann for examples of this lizard, obtained by him in beech woods at Bosco d'Umbra, Monte Gargano, N. Apulia, so far the southernmost well-ascertained locality in Italy for the typical form †.

	1.	2.	3.	4.	5.	6.	7.
♂	57	53	24	10	25	16–15	26
„	57	55	24	10	23	18–17	26

Typical in scaling, but one of the specimens has five anterior upper labials on one side. Dorsal scales feebly keeled. Pale brown above, with small blackish spots, black with light spots on the sides; bright red beneath, spotted with black.

* I do not mean that the paired vertebral spots of var. *monticola* (see my pl. xxiv. fig. 2, Tr. 1905) represent the vertebral series of spots or streak of the f. *typica* (l. c. figs. 3 & 4), or the paired vertebral spots of some individuals of that form and of vars. *campestris* and *serpa* (occipital band of Méhely). On the contrary, these have totally disappeared in the var. *bocagii*, in some specimens of which (*l. c.* fig. 6) the series of spots bordering the dorso-lateral light streak (Supraciliarstreifen of Méhely) have become approximated in such a manner as to lead to the condition shown by the var. *monticola*, and correspond to the Parietalband of Méhely. The series of Spanish and Portuguese specimens at my disposal show this most conclusively, thus affording further proof of the derivation of the var. *monticola* from the var. *bocagii*, itself derived from the f. *typica*. See diagram on p. 146 (fig. 3).

† I have, however, since writing the above, seen specimens in the Florence Museum, labelled "Calabria ultra," and which are certainly referable to the typical form. I have noted the following particulars of two of those specimens :—

	1.	2.	3.	4.	5.	6.	7.
♂	60	54	25	9	24	17–16	25
♀	55	55	27	10	23	18	25

As early as 1879 (Arch. f. Nat. p. 302) Bedriaga recorded this form from Arena, Calabria, on the authority of Dr. Cavanna.

In other places on Monte Gargano, Prof. Neumann collected specimens of the

Var. SERPA,

on the whole, very similar to those from Rome and Naples, but some with comparatively large scales, as may be seen from the following tabulation:—

	1.	2.	3.	4.	5.	6.	7.
♂	81	55	25	9	26	21–20	28
,,	77	65	26	11	26	21–20	28
,,	77	64	25	13	26	22–21	28
,,	75	69	26	10	30	24	30
,,	72	58	25	11	27	20	28
♀	70	55	30	10	25	19–21	28
,,	68	66	27	9	26	24–22	29
,,	65	56	29	9	26	23–22	29

In the specimens of the var. *serpa*, previously examined by me, 58 was the lowest number of scales across the body, 62 to 70 being the usual number; whilst in this little series I count 55 to 69. A specimen with as few as 50 scales is recorded further on, from Sicily.

Var. BRUEGGEMANNI.

The head of the male specimen represented on Pl. XVII. fig. 2, is remarkable for the large size of the temporal scales and for having the rostral shield entering the nostril, two characters which are often found combined in the vars. *campestris* and *fiumana*. This specimen formed part of a number of lizards purchased by the Zoological Society as from Tuscany. I may add that its frontal shield is much shorter than its distance from the end of the snout, a condition quite frequent in this variety.

In a male from Bagni di Ripoli, near Florence, presented by Dr. Banchi, I find the temporal scutellation described by Méhely as typical of *L. horvathi*, the masseteric disk being low down and separated from the last labial by one series of scales and from the parietal by three (Pl. XVII. fig. 5), a state of things which I have occasionally met with in the typical form and other varieties.

As believed by its original describer, this form connects the typical Wall-Lizard with the var. *serpa*. In the markings of the upper parts some specimens closely approach the spotted-streaked form of the latter; such is the male specimen from Florence, preserved in Dr. de Bedriaga's Collection, figured on Pl. XVII. fig. 3. Figs. 1 and 4 on the same Plate show how greatly the markings vary individually in examples from the same part of Italy.

Var. INSULANICA.

Lacerta muralis neapolitana, part., Bedriaga, Arch. f. Naturg. 1879, p. 277.

Lacerta muralis neapolitana, subvars. *e* (part.) et *f*, Bedriaga, Bull. Soc. Zool. France, 1879, pp. 204 & 205.

Lacerta muralis reticulata Eimer, Arch. f. Naturg. 1881, pp. 325 & 357, pl. xiii. fig. 12.
Lacerta muralis neopolitana, var. *insulanica* Bedriaga, Bull. Soc. Nat. Moscou, lvi. 1882, p. 101.
Lacerta muralis neapolitana, subvars. *g* et *h* (part.), Bedriaga, Abh. Senck. Ges. xiv. 1886, pp. 288 & 229.

"Le Lézard des murailles provenant de l'île de Pianose laisse voir sur un beau fond vert des bandes noires transversales et ondulées. Les parties inférieures du corps sont bleuâtres. Les séries longitudinales de plaques ventrales qui confinent aux flancs sont d'un beau bleu marin tacheté de noir. Les formes de ce Lézard offrent des caractères nouveaux. Sa tête est déprimée, le cou est fortement renflé et beaucoup plus large que la tête; son tronc est très-épais. *Par ses formes, cette sous-variété paraît être très-voisine du Lézard oxycéphale de Fitzinger* [read *L. bedriagæ* Camerano]." Bedriaga, 1879, p. 205 (italics mine).

I had quite independently arrived at the same conclusion on examining a specimen from Pianosa, near Elba, received after my first contribution (Tr. 1905) had been set up in type, and to which I thus alluded in a footnote (p. 384):—"I have received from Prof. Camerano a male specimen from Pianosa, *which may well be regarded as intermediate between the vars.* brueggemanni *and* bedriagæ."

Before having seen the specimens referred to the var. *nigriventris* (or *ventromaculata* Bedr.) from the Scuola islet, near Pianosa, alluded to by Bedriaga *, I felt much inclined to think that they would prove to be only a darker form of the var. *insulanica* of Pianosa, a supposition which has been fully confirmed by the examination I have been able to make of one of Dr. de Bedriaga's specimens, forming part of his private collection, and of several in the Florence Museum. This variety is directly connected, through the var. *brueggemanni*, with the typical *L. muralis*, not with the varieties grouped together as subspecies *neapolitana*. It may be regarded as a form evolved on parallel lines with the true var. *nigriventris*, from the province of Rome, of which I had the pleasure of seeing fine specimens running on the old outer walls of Rome in December last. I had a few captured for me, and two were exhibited last winter in the Reptile House of the Zoological Society. Some had the spots yellow, others had them of a bright green, and a few had the sides of a beautiful lapis-blue between the meshes of a black network.

Before describing the var. *insulanica*, I will give particulars of sex, size, and scaling in the 14 specimens examined, two being the types, in Dr. de Bedriaga's Collection (Pl. XVIII. fig. 1); the third is the male from Pianosa, received from Prof. Camerano and mentioned in 1905, the next eight from the same locality, presented to the British Museum by Count Peracca (Pl. XVIII. fig. 2); the first specimen from the Scuola islet is in Dr. de Bedriaga's Collection (Pl. XVIII. fig. 3), and the last two are in the Florence Museum.

* *L. c.*—By an oversight, I previously referred to this lizard as being from a rock near Pianosa in the Adriatic.

		1.	2.	3.	4.	5.	6.	7.
Pianosa, type	♂	80	74	26	13	29	23–24	33
,, ,,	,,	67	62	24	12	24	19	27
,,	♂	68	70	25	10	32	23	28
,,	,,	73	65	23	11	26	22–21	28
,,	,,	72	62	23	11	26	19–21	28
,,	,,	67	65	25	10	30	22	30
,,	,,	49	66	25	11	28	22	28
,,	,,	48	61	24	9	28	21–23	28
,,	♀	62	63	28	8	27	26-25	31
,,	,,	62	61	27	9	24	24–21	28
,,	,,	59	60	27	11	26	21–20	26
Scuola	♂	70	63	23	12	26	19	28
,,	,,	65	70	26	12	26	21–22	32
,,	,,	65	64	26	11	25	19	29

The rostral does not touch the nostril. The series of granules between the supraoculars and the supraciliaries is sometimes complete (it is so in the larger of the two types), but the first supraciliary usually forms a suture with the supraocular. Parietal in contact with the upper postocular. Masseteric disk sometimes large, sometimes small, or very small. One specimen (♀) has 5 anterior labials on both sides, the others have 4.

Dorsal scales granular, feebly but distinctly keeled, 60 to 74 across the body, 40 to 67 on the middle of the back corresponding to the length of the head, 4 or 5 on the sides corresponding to a ventral plate. Tibial scales a little smaller than dorsals, very distinctly keeled. 19 to 26 femoral pores. 26 to 33 lamellæ under the fourth toe. The hind limb reaches the collar, or between the collar and the ear, in males, the axil in females.

In coloration often very similar to var. *bedriagæ*. Upper parts and sides of body and limbs green or yellowish with a black network which may have a tendency to form cross-bands as in *L. tiliguerta* (*tigris* of Eimer). Sometimes the black predominates to such an extent as to constitute the ground-colour on which the green appears as small round or vermicular spots, as in the var. *nigriventris*, or the lizard from Filfola Rock. Head pale brown above, with small or large black spots or vermiculations; lips often black, each shield with a light spot. White or pink beneath, throat with grey or blackish markings, the whole or the sides of the belly spotted with black; blue spots on the outer ventrals. Tail with regular cross-bars of black and white ocellar spots, most marked on the sides.

There is no marked sexual coloration-dimorphism, and the young, which I have seen in the Florence Museum, is reticulated, not streaked.

Measurements (in millimetres):—

	1.	2.	3.	4.	5.	6.
From end of snout to vent	80	72	68	62	70	80
„ „ „ fore limb . .	34	28	26	22	27	35
Length of head	22	19	18	14	19	23
Width of head	15	12	13	9	12	16
Depth of head	10	10	9	7	10	10
Fore limb	31	25	23	20	24	33
Hind limb	47	41	39	34	37	47
Foot	27	22	20	17	20	26

1. ♂, type, Pianosa (Bedriaga Collection). 2–3. ♂, Pianosa. 4. ♀, Pianosa. 5. ♂, Scuola, near Pianosa (Bedriaga Collection). In column 6 I have added, for comparison with no. 1, the measurements of a large male of var. *bedriagæ* from Bastelica, one of the types, in the Bedriaga Collection.

This var. *insulanica* may be regarded as completely connecting the var. *brueggemanni* with the var. *tiliguerta*, differing from the latter in having the belly more or less spotted, at least on the sides. As I have previously pointed out (Tr. 1905, p. 384, footnote), the smaller var. *brueggemanni* occurs on Elba, and specimens from S. Piero, near Elba, are in the Werner Collection.

Regarding, with Bedriaga, the Pianosa lizard as also nearly related to the Corsican var. *bedriagæ*, we may turn to Méhely's latest paper (1909, p. 486) to see what are the characters which, according to him, justify the specific separation of the latter from *L. muralis*, of which he regards *L. brueggemanni* as a variety.

Leaving out the cranial characters, which are likewise inconstant (see above, p. 136), but with which I do not propose to deal at present, the following are the points on which this author lays greater stress to show that *L. bedriagæ*, or *reticulata* as he calls it, cannot be regarded as a race of *L. muralis*, but is unquestionably entitled to rank as a species pertaining to a quite different group.

1. *The robust, stout habitus.*—This is true only of males, and a comparison of the male figured by me (Tr. 1905, pl. xxix. fig. 7) with one of *L. insulanica* in the present paper (Pl. XVIII. fig. 1) shows how slight such a difference really is (see also the comparative measurements given above). Besides, Méhely includes in the same species *L. sardoa*, which, according to his own definition, is more slender than *L. bedriagæ*. One does not see, therefore, how the robust, stout form can be appealed to in justification of the specific distinction. Bedriaga (see above, p. 149) alluded specially to the stout form of the Pianosa lizard.

2. *The short frontal.*—It may be quite as short in *L. insulanica*, and it is not at all short in *L. sardoa* (see Tr. 1905, pl. xxviii. figs. 8 & 9). Big, heavy males of var. *brueggemanni* and *filfolensis* often have a short frontal, much shorter than its distance from the end of the snout. There is nothing in this character.

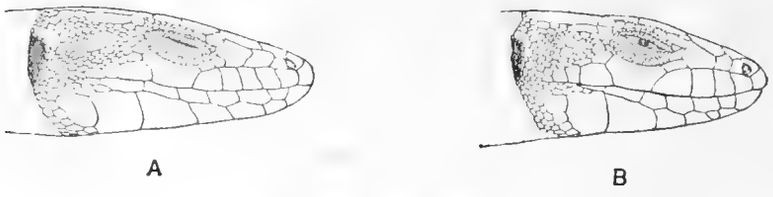
3. *The complete series of granules between the supraoculars and the supraciliaries.*—Again a worthless specific character, occurring more or less frequently in the typical *L. muralis* and most of its varieties. Besides, Méhely omits to state that, as he himself admits higher up (1909, p. 478), this is only "usually" the case in *L. bedriagæ*. I cannot understand how such characters, which are known to break down in almost every variety, can be adduced in favour of specific distinction.

4. *The vertical direction of the suture between the first and second supraciliaries.*—Oblique, even strongly so, on one side or on both sides in several specimens (Brit. Mus. and Bedriaga Coll.) of *L. bedriagæ*, vertical on one side in a male of *L. insulanica*. The character is subject to frequent exceptions in the typical *L. muralis*, in which the said suture is usually oblique (see above, p. 139).

5. *The short freno-ocular* (=second loreal).—May be shorter, in proportion to its distance from the nostril, in *L. insulanica* than in *L. bedriagæ*. In two specimens (♂ ♀) of the latter, I find it as long as its distance from the rostral. Compare also fig. 8 *a* on my pl. xxviii. (Tr. 1905) with side views of heads of other varieties on the same plate.

6. *The homogeneous temporal scutellation*, by which expression is meant that a masseteric disk is absent.—Higher up (1909, p. 479) Méhely admits that it is sometimes present, although very small. A large male from Bastelica, in the Bedriaga Collection, the head of which is here figured (text-fig. 4 A) alongside with that of a male of the var. *insulanica*, from Pianosa, in the same collection (text-fig. 4 B), shows how far these statements are to be depended upon when submitted to the test of even a but moderately large series of specimens.

Text-fig. 4.



A. Var. *bedriagæ*; B. Var. *insulanica*. From photographs.

7. *The very distinct supratemporal.*—This is not constant (see Tr. 1905, p. 412), and besides the shield is twice as large in a male *L. insulanica* as in a female (one of the types) of *L. bedriagæ*. I request a comparison of figs. 7 & 9 of pl. xxviii. Tr. 1905 *.

8. *The nearly smooth upper caudal scales and the smooth tibial and dorsal scales.*—The caudal scales are often very distinctly keeled in *L. bedriagæ* and *L. sardoa*,

* See also Méhely's own figure of the head of *L. bedriagæ* in Ann. Mus. Hung. iii. 1905, p. 301, which does not agree with his later definition of the Archæolacertæ, *op. cit.* vii. 1909, p. 424.

and smooth dorsal scales and nearly smooth caudals are found in so many typical *L. muralis* and closely related varieties, that very little importance attaches to such a character. Specimens with smooth and keeled dorsal scales are placed in the same species by Méhely when dealing with *L. saxicola* (1909, p. 491).

9. *The high number of gular scales.*—26 to 39 in *L. bedriagæ*, 24 to 32 in *L. insulanica*, 22 to 30 in *L. brueggemanni*.

10. *The more feeble gular fold.*—Better marked in a large male *L. bedriagæ* from Tinozzo, and in another from Bastelica than in some of the lizards from Pianosa.

11. *The same number of transverse series of ventral plates in the two sexes.*—See what I have to say of the Maltese lizards, p. 160.

12. *The greater number of rows of scales on the lower surface of the thigh.*—I count 5 to 8 rows between the large shields and the femoral pores in *L. bedriagæ*, 5 or 6 in *L. insulanica*.

13. *The greater number of femoral pores.*—19 to 31 in *L. bedriagæ*, 19 to 26 in *L. insulanica*.

As regards the scaling, a greater difference exists between a typical *L. muralis* from Lower Austria (A) and *L. insulanica* than between *L. insulanica* (B) and *L. bedriagæ* (C), as shown by the numbers of scales across the body (*a*), of femoral pores (*b*), and of subdigital lamellæ under the fourth toe (*c*):—

A.	*a*. 42–53.	*b*. 13–19.	*c*. 22–25.
B.	„ 60–74.	„ 19–26.	„ 26–33.
C.	„ 58–78.	„ 19–31.	„ 26–31.

14. *The reticulated livery of the young and the absence of secondary sexual characters in the markings.*—These are features which are likewise characteristic of *L. insulanica*. As the latter point is one on which Méhely lays great stress in his classification of the Wall-Lizards, I think no better example could be adduced to show the fallacy of his conclusions than that offered by this Pianosa lizard, which, in its habitat between Elba and Corsica, appears to constitute a geographical link between the Elba lizards of the var. *brueggemanni* and the var. *bedriagæ*, isolated on the mountains of Corsica. I do not suppose any one who has devoted some study to these lizards could think of regarding the Filfola Rock lizard as more than a variety derived from the smaller form living on Malta; and yet the latter shows as strong a sexual coloration-dimorphism as the typical *L. muralis*, whilst the former is, in this respect, in the same condition as *L. bedriagæ*.

IV.—SARDINIA (Supplement).

Var. QUADRILINEATA.

Signor Meloni has sent me 34 specimens from Latzobé, Urzulei-Ogliastra Mountains, altitude 1080 m., which vary much in markings. Many of the males have large black

spots on the ventrals, and a few of the females have some scattered black dots on the same region. The series of granules between the supraoculars and the supraciliaries is complete in 18 specimens. 4 specimens have five anterior labials on each side, 6 have five on one side and four on the other, and one has three on each side. In two specimens the rostral forms a suture with the frontonasal. In all but two the masseteric disk is large, and in one only is the parietal excluded from contact with the upper postocular. Femoral pores 20 to 29.

Out of four specimens from Cagliari, received from Count Peracca, one has five anterior upper labials. Femoral pores 21 to 25.

In nearly all these specimens the rostral shield touches or enters the nostril. In this respect the var. *quadrilineata* tends towards the var. *pityusensis*, in which the rostral constantly enters the nostril. There are many points of agreement between these two varieties, and it now appears to me not improbable that the Iviza lizard, which differs considerably from the Wall-Lizards of the Spanish Peninsula, may be directly derived from those inhabiting Corsica and Sardinia. This would be in accordance with what we know of the herpetological fauna of the Balearic Islands, which lacks any truly Spanish elements, and shows decided Eastern affinities in the presence of *Testudo græca* and *Bufo viridis*, to say nothing of the reported occurrence on Minorca of *Lacerta muralis*, var. *tiliguerta*, which, in view of the present knowledge of its distribution, may, after all, not be due to human agency, as I was first inclined to believe.

Var. SARDOA.

Since the appearance of my first contribution, Count Peracca has published * supplementary notes on his *L. sardoa*, based on the examination of 26 further specimens. The lizard was then believed to be confined to a single valley on the Gennargentu, but on a recent rapid inspection of the collection in the Florence Museum, Count Peracca and I found three large specimens, labelled as from Monte Limbara. In these specimens, the nasals are narrowly in contact with each other behind the rostral, whilst in the 26 specimens described by Peracca the frontonasal is in contact with the rostral, usually forming an extensive suture. The postnasal is constantly single, and, with three exceptions, the parietal is in contact with the upper postocular. There are more frequently 4 than 5 upper labials in front of the subocular.

According to the author's tabulation, the number of scales across the body varies from 62 to 76, the transverse series of ventrals from 23 to 26, the collar-shields from 11 to 15, the gular scales, in a longitudinal series, from 29 to 38, the femoral pores from 21 to 30, frequently with a second series of rudimentary pores, as noticed in the

* Boll. Mus. Zool. Torin. xx. no. 519, 1905, with a plate.

type specimen, and the lamellæ under the fourth toe from 26 to 29. Two specimens have 8 longitudinal rows of ventrals.

Peracca also points to the shape of the frontal shield as a distinctive feature of *L. sardoa*, the antero-lateral borders being convex instead of straight or concave. But I cannot agree with him as to the importance of this character, since I find the same condition in two specimens of the var. *bedriagæ*, and I have observed many similar cases in the typical *L. muralis* and in the vars. *quadrilineata*, *serpa*, and others. I have seen specimens in which the antero-lateral border of the frontal is concave on one side and convex on the other, this being particularly marked in a specimen of the var. *serpa* from Spalato, Dalmatia, preserved in Dr. Werner's Collection.

V.—SICILY (Supplement).

In my previous paper I referred all the specimens that had come under my notice to the var. *serpa*. With a more extensive material before me, I find that both the vars. *serpa* (or *sicula*) and *tiliguerta* occur in Sicily. Prof. Méhely * was therefore perfectly right in referring Sicilian specimens to the latter form, and I was wrong in throwing doubts on the correctness of his identification. I apologise to him for having done so. The specimens from Palermo and Catania, figured in Tr. 1905, pl. xxvii. fig. 7 and xxviii. fig. 4, as well as others from the same localities, belong to the var. *serpa*, whilst those from Messina (pl. xxvii. fig. 6), Syracuse, Modica, and some from Catania, should be referred to the var. *tiliguerta*. I must, nevertheless, point out that I am not always able to distinguish examples of the vars. *tiliguerta* and *serpa*, so completely do they merge into each other, and the Eastern var. *hieroglyphica* (p. 201) further adds to the difficulty.

Var. SERPA.

I append particulars of specimens collected by Prof. O. Neumann on Monte Cuccio, near Palermo, and from Palermo in Dr. Werner's Collection. It will be seen that they have, on an average, a lower number of scales across the body (50 to 67), fewer femoral pores (18 to 23), and fewer subdigital scales (28 to 33) than in the series referred to var. *tiliguerta* (scales 62–79, pores 21–28, subdigital scales 30–35). Further, the head is shorter and more convex, the parietal shield is always in contact with the upper postocular, the dorsal scales are more distinctly keeled, and the coloration is different. Some specimens are bright green above, with black spots forming longitudinal series, others are brown with or without spots, and with two whitish lines along each side. The belly is white, orange, or brick-red in males, white or

* Ann. Mus. Hung. v. 1907, p. 483.

pink in females*, the outer ventral shields blue or bluish in both sexes; in one male the other ventrals are white, each with a brick-red spot.

The rostral sometimes enters the nostril, and in one male it forms a short suture with the frontonasal. The series of granules between the supraoculars and the supraciliaries may be complete or much reduced, and the masseteric disk may be very large, very small, or absent.

		1.	2.	3.	4.	5.	6.	7.
Monte Cuccio	♂	72	67	26	12	28	21–23	28
,,	,,	67	58	27	9	25	22	29
,,	,,	66	60	25	10	26	23–21	31
,,	,,	66	50	28	9	22	20–19	29
,,	,,	64	59	27	10	24	22	29
,,	♀	68	64	28	11	26	20–21	33
,,	,,	64	57	29	9	23	19–20	27
,,	,,	62	59	28	9	24	20	29
,,	,,	57	63	30	10	27	20–21	30
,,	,,	57	58	28	11	22	20	29
Palermo	♂	70	66	26	12	30	20–22	30
,,	,,	68	57	26	8	26	21–20	29
,,	,,	67	60	25	10	23	21–20	30
,,	,,	62	61	25	9	22	18–19	29
,,	♀	63	62	28	9	25	22	29
,,	,,	62	59	28	9	26	20	29

Measurements (in millimetres) of specimens from Monte Cuccio:—

	♂.	♀.
From end of snout to vent	72	68
,, ,, ,, fore limb	29	23
Length of head	19	15
Width of head	12	9
Depth of head	9	8
Fore limb	26	22
Hind limb	43	38
Foot	23	20
Tail	155	125

* According to Camerano (Mon. Saur. Ital. p. 64) the lower parts may be of a "rosso deciso" in females. The colour of the lower parts is of very little importance for the definition of varieties (see Tr. 1905, p. 383, and pl. xxii.), and is not always a guide for the distinction of the sexes, as the so-called var. *rubriventris* of the typical form may be found in both sexes (Bedriaga, Bull. Soc. Zool. France, 1879, p. 215). Kammerer is mistaken when he says of the female (Arch. Entwickm. xxix. 1910, p. 459), "Ventralseite des normalen. *L. muralis* niemals rot, die normale Farbe der unteren Teile beim typischen *L. muralis* Männchen."

Var. TILIGUERTA.

The following are particulars of specimens from Palermo in Dr. Werner's Collection, and from Monte Cuccio and Tarmina, collected by Prof. O. Neumann :—

		1.	2.	3.	4.	5.	6.	7.
Palermo	♂	74	71	26	10	29	24	31
„	„	70	73	26	11	29	28–26	35
„	„	70	74	28	11	29	26	31
„	♀	65	68	27	11	26	22–23	32
„	„	61	65	28	11	26	23–21	30
Monte Cuccio	♂	73	79	27	11	29	25–23	30
„	♀	70	70	31	11	29	23–22	31
Tarmina	♂	67	75	25	11	31	27	33
„	„	67	70	28	10	28	25–23	30
„	„	65	67	27	12	24	23–24	32
„	♀	59	68	30	8	26	23–24	33
„	„	56	68	30	10	28	24–22	33

In 10 out of 33 Sicilian specimens examined, the anterior temporal is in contact with the fourth supraocular.

The coloration varies greatly. Some specimens have black spots disposed longitudinally, with a more or less regular vertebral stripe, as in the Sardinian specimen figured by me in Tr. 1905, pl. xxix. fig. 5; others are reticulate all over, or the black markings form more or less distinct cross-bars (var. *tigris* of Eimer), as figured on the same plate, fig. 6. In the pattern of markings the var. *tiliguerta* may approach very closely certain individuals of the var. *bedriagæ*, as shown by the specimens here figured (Pl. XVIII. figs. 7 & 8). The markings on the tail may be very indistinct. And, finally, some specimens are uniformly greyish-olive or brownish, and evidently represent the *L. olivacea* and *L. puccina* of Rafinesque.

Dr. de Bedriaga has sent me, alive, three specimens from Pantellaria Island, between Sicily and Tunisia, which are unquestionably referable to the var. *tiliguerta*:—

	1.	2.	3.	4.	5.	6.	7.
♂	72	71	26	10	32	25–26	35
„	70	75	25	9	29	24	33
♀	63	67	27	9	27	25–24	32

In both the males the supratemporal is in contact with the fourth supraocular.

In view of our extended knowledge of the range of the var. *tiliguerta*, the occurrence of this form in Tunisia no longer appears improbable (*cf.* Tr. 1905, p. 419). The question whether or not it is indigenous on Minorca (*l. c.* p. 370) remains unsolved.

VI.—MALTA AND LINOSA (Supplement).

With insufficient material before me, I referred, in my previous contribution, the lizards from Malta and Linosa to *L. serpa*, and maintained the var. *filfolensis* for the larger form from the Filfola Rock, near Malta. I now find that the characters for separating the latter entirely break down, but the Maltese and Linosa varieties are sufficiently distinguished by their coloration and their average smaller scaling to be separated from the var. *serpa*. I therefore retain the name *filfolensis*, but apply it to the lizards from the main island and from Linosa, as well as to those for which it was originally intended. Much as I regret using so unsuitable a designation, in view of the extended range of the variety, I am compelled to do so in preference to the alternative of proposing a new name. I can quite conceive these lizards being united with the var. *quadrilineata* from Corsica and Sardinia, from which some specimens are, to my eye, undistinguishable. The only characters which can be adduced in favour of their separation is that in the var. *quadrilineata* there are usually fewer than 70 scales across the body (56 to 75 being the ascertained range of variation), and the rostral usually touches or enters the nostril, and in the var. *filfolensis* there are usually more scales and the rostral very rarely touches the nostril *. Further, I am not prepared to say that I could, in all cases, tell a Maltese lizard from certain specimens of the var. *serpa* from Italy, or of the var. *insulanica* from Pianosa, near Elba. I may repeat it again, most of these forms are undefinable by the characters to which we have to resort, however greatly they seem to differ when only their extremes are compared; and that is why, until they can be properly diagnosed, I refrain from allowing them the rank of species. In its very fine lepidosis this variety shows special affinity to the Balearic var. *lilfordi*.

The Maltese lizard is now represented by a series of 19 specimens, received from Mr. Despott (first four specimens in the table of particulars), Mrs. F. H. Pollen (fifth specimen, figured, Pl. XVII. fig. 6), and Capt. H. Lynes.

	1.	2.	3.	4.	5.	6.	7.
♂	62	66	27	10	28	22–23	30
,, ...	62	73	27	12	29	24–25 †	31
♀	51	67	28	10	28	20	31
,, ...	50	71	28	9	33	23	34
♂	60	64	26	10	30	20–22	30
,, ...	62	72	27	10	36	24–22	32
,, ...	60	75	24	11	34	25–23	33
,, ...	59	80	27	10	31	24–26	34
,, ...	57	70	27	11	32	21–19	32
,, ...	56	66	28	9	30	23	35
♀	53	75	29	10	28	19–20	30

* In 8 specimens out of 70 examined.

† This specimen has two rows of pseudopores, as have been observed in *L. sardoa*.

50 to 60 scales correspond to the length of the head.

The masseteric disk is always present and usually well developed; in two specimens the parietal does not touch the upper postocular. Some females closely resemble the striped form of var. *quadrilineata*, and some males are also very suggestive of the so-called *L. genei*. The belly is unspotted in all the specimens.

There are also 9 specimens from a rocky island near the mouth of St. Paul's Bay, presented by Capt. Lynes (Pl. XVII. fig. 7), 6 of which are here tabulated :—

	1.	2.	3.	4.	5.	6.	7.
♂	59	85	27	9	33	24–23	36
„	55	78	27	10	33	24–23	36
„	55	70	26	10	33	21–22	35
„	55	71	27	9	34	23–24	33
♀	50	84	30	11	35	24–25	36
„	48	70	29	10	34	20–21	35

In three specimens the parietal shield does not touch the upper postocular. Two of the males have black spots on the belly, forming two longitudinal bands; the blue colour occupying the outer ventral shields forms an uninterrupted band from axil to groin.

Two of the specimens, a male and a female, agree in this anomaly, that the fronto-nasal is divided into two, with an azygous shield between them and the præfrontals.

Of the Filfola Rock form, specimens collected by Mr. Despott were received at the Zoological Gardens in 1910, and are still living. The belly is black and blue on the sides, copper-colour, orange, or black in the middle in males, dull yellow or black in females; dorsal spots of a pale green.

I append particulars of 15 specimens, in spirit, obtained by the same collector, and preserved in the British Museum.

	1.	2.	3.	4.	5.	6.	7.
♂	80	77	27	10	37	25–26	?
„	79	76	28	11	36	23	34
„	78	77	28	11	36	24–25	35
„	78	79	27	11	34	23–24	?
„	76	70	28	11	34	25–24	32
„	75	80	29	10	32	23–25	35
„	74	77	27	12	36	24–26	31
„	73	75	28	12	37	22–24	34
„	72	79	28	10	33	23–24	35
„	65	74	28	11	34	22	31
♀	64	73	30	9	34	24	31
„	62	74	29	11	38	24	36
„	62	70	28	12	32	24	34
„	62	73	28	11	30	25	31
„	57	70	30	9	34	22–23	?

In the last specimen the masseteric disk is absent. In 5 specimens the parietal shield does not touch the upper postocular. The frontal shield is usually considerably

shorter than its distance from the end of the snout. Some specimens, male and female, are of a dull olive-brown on the back, with black spots and a broad black vertebral stripe (Pl. XVII. fig. 8).

It is noteworthy that in the Filfola lizard, as well as in those from Malta and Linosa, there is not that considerable difference in the number of transverse series of ventral plates between the sexes as is generally the case in the typical form and other varieties of *L. muralis*. Thus my tables show the numbers to be 24 to 28 (usually 25) in males, 27 to 32 (usually 29) in females of the typical form, whilst in the Maltese-Linosa lizard they are 24 to 29 (usually 26 to 22) in males, 28 to 31 (usually 28 or 29) in females. In this respect the var. *filfolensis* resembles the var. *bedriagæ*, with 24 to 28 series (usually 25) in males, and 25 to 28 (usually 26) in females.

This lizard inhabiting Linosa appears to be identical with that of Malta, as I have already pointed out (Tr. 1905, p. 401).

I am indebted to Dr. de Bedriaga for eight specimens, four of which (2 ♂, 2 ♀) were received alive.

In one of the male specimens the top of the head and a broad median dorsal stripe are of a slightly reddish brown, the sides are black with round greenish yellow spots; outer row of ventral shields black and blue; belly pale pink with a longitudinal series of large black spots on the second row of shields (Pl. XVIII. fig. 5); chin and throat yellowish white, with large black spots or marblings. In another male a black network extends over the whole back, whilst in further individuals of the same sex (Pl. XVIII. fig. 4) the upper parts are black with small light spots, exactly as in the lizard from Filfola.

The larger female, received alive, is dark brown above, with a black network enclosing small yellowish spots, and with traces of three black longitudinal stripes, the median very narrow; belly pinkish, the sides spotted with black; small blue spots on the outer row of ventral shields. The smaller female also dark brown above, with a narrow black vertebral streak and a black lateral band edged with whitish above and below (Pl. XVIII. fig. 6); lower parts as in the preceding.

The following tabulation refers to the 8 specimens presented by Dr. de Bedriaga and to the one (last on the list) received from the late Prof. Giglioli, and noticed and figured in my previous contribution (Tr. 1905, p. 401, pl. xxvii. fig. 8).

	1.	2.	3.	4.	5.	6.	7.
♂	70	71	27	10	36	25–26	35
„	65	75	26	12	33	26–27	34
„	65	67	27	10	29	21–22	33
„	65	70	27	9	36	25–24	35
„	62	69	25	11	28	21–23	35
♀	61	73	28	10	30	24–23	31
„	54	73	29	11	30	22	31
„	49	69	28	9	28	22–21	31
„	58	68	28	9	28	23	34

In 3 specimens (out of 9) the parietal does not touch the upper postocular. The series of granules between the supraoculars and the supraciliaries is usually complete. Masseteric disk large. Dorsal scales granular, smooth or faintly keeled, 4 or 5 series on the sides corresponding to a ventral plate, 46 to 58 corresponding to the length of the head. Scales on tibia smaller than dorsals, feebly keeled. Caudal scales truncate and diagonal, on the sides with the keel much nearer the dorsal border.

VII.—EAST COAST AND ISLANDS OF THE ADRIATIC, GREECE.

Forma TYPICA.

I have received a good many of these lizards from various localities East of the Adriatic, and, before offering remarks on them, I will give a tabulation of the size and numbers of scales and pores in a number of specimens which, unless marked W. (Werner Collection), are preserved in the British Museum.

			1.	2.	3.	4.	5.	6.	7.
	St. Peter, Carniola . .	♂	50	55	26	9	23	17	24
	„ „	„	50	50	25	9	22	15–16	23
W.	Bassovica, nr. Trieste .	„	64	56	25	9	29	20–19	29
	Bosnia	„	66	55	23	10	23	17–18	24
	„	„	65	52	24	8	25	21–19	26
	„	♀	55	46	28	9	22	15–16	24
	Travnik, Bosnia . . .	♂	52	54	22	9	22	18–17	22
W.	Livno, „ . . .	„	49	49	24	9	21	15–16	23
W.	„ „ . . .	♀	55	45	29	9	22	16–17	23
W.	Herzegovina	♂	65	50	24	10	23	17–16	23
W.	Korito, Herzegovina . .	„	64	50	26	9	24	18–19	24
W.	„ „ . .	♀	63	46	30	8	24	15–16	23
W.	Centr. Bulgaria . . .	♂	60	52	24	9	26	19–20	26
	Tetwen, Bulgaria . .	„	61	54	24	9	25	19–20	25
	„ „ . . .	„	58	55	25	8	28	21–22	25
	Panagiuriste, Bulgaria .	„	55	52	23	8	26	20	23
	Rutschuk, „ .	„	55	53	25	9	24	18–19	24
W.	„ „ .	♀	54	52	26	9	29	19–18	23
	L. Stymphalos, Morea .	♂	65	54	26	11	24	20–19	28

The specimen from Bassovica, one of the types of Werner's var. *maculiventris* (Verh. zool.-bot. Ges. Wien, xli. 1891, p. 742)*; much spotted with black above and beneath, with a black, wavy lateral band, approaches the var. *brueggemanni* in the longer hind limb reaching the collar, with the foot $1\frac{1}{4}$ the length of the head and with more numerous lamellæ (29) under the fourth toe. The series of granules between the supraciliaries and the supraoculars is complete, and there is in addition a second, incomplete, series. Parietal $1\frac{2}{3}$ times as long as broad; interparietal nearly 4 times as long as the occipital; an azygous shield between the præfrontals. Collar

* Also recorded from Goritz and Fiume.

feebly denticulate. Dorsal scales oval-hexagonal, feebly but distinctly keeled, larger than tibials; caudals obtusely keeled, 40 in the fourth whorl.

Measurements (in millimetres) :—

From end of snout to vent	64
„ „ „ fore limb	25
Length of head	17
Width of head	11
Depth of head	7·5
Fore limb	23
Hind limb	38
Foot	21
Tail (reproduced)	110

This seems to be the form, supposed to be from Dalmatia, described by Bedriaga, Arch. f. Naturg. 1878, p. 274 (*L. muralis fusca* aus Dalmatien).

The specimens from Bosnia, Herzegovina, and Bulgaria have shorter hind limbs, reaching the axil in the males, the wrist or the elbow of the adpressed fore limb in the females, and the foot is not or but slightly longer than the head, sometimes even slightly shorter. This difference can be appreciated by a comparison of the measurements of the Bassovica specimen with those of specimens from Bosnia :—

Measurements (in millimetres) :—

	♂.	♀.
From end of snout to vent	66	55
„ „ „ fore limb	25	19
Length of head	17	12
Width of head	11	8
Depth of head	8	6
Fore limb	21	18
Hind limb	32	26
Foot	16	15
Tail	135	74*

The suture between the internasals is usually extremely short, and the series of granules between the supraoculars and the supraciliaries is incomplete †. The dorsal scales are roundish, or roundish hexagonal, sometimes very distinctly keeled, sometimes nearly smooth, always larger than the tibials; in a female from Livno, the caudal scales are very feebly keeled, and the whorls are alternately longer and shorter in a very marked manner; the caudal scales are always truncate or indistinctly pointed,

* Reproduced.

† Except in one specimen from St. Peter, Carniola, and in one from Korito, Herzegovina; in other specimens from the latter locality (in Dr. Werner's Collection), these granules may be reduced to 3 to 5, thus showing the absolute worthlessness of this character for distinguishing species in the *L. muralis* group.

and the collar-edge is entire, characters which distinguish, though not sharply, the typical form from the following variety.

Some males (Bosnia, Bulgaria) are greyish brown above, with black spots or vermiculations on the back, blackish brown on the sides, with light, black-edged round spots, the larger of which form a regular dorso-lateral series, a pattern of coloration which can be exactly matched by some Caucasian specimens, in which, contrary to Méhely's statement, the head is not in any way flatter than in some of the Bosnian lizards. These males have the lower parts more or less spotted with black, occasionally to such an extent as to appear black with numerous small white spots (Pl. XVI. fig. 6). Some males, and all females examined, have a black vertebral streak or series of spots (Pl. XVI. fig. 7). The lower parts are unspotted in females, and appear to have been white; they were salmon-pink in a recently preserved male from Panagiuriste, Bulgaria. According to Werner (1891), the Istrian specimens examined by him have the under parts white in both sexes, whilst males from Herzegovina have these parts red (1899).

References to the *L. muralis typica* from East of the Adriatic are made by Werner, Rept. Amph. Oesterr.-Ung. p. 40 (1897), Wiss. Mitth. Bosn. Herzog. vi. 1899, p. 819, and x. 1907, p. 660, and by A. Klaptocz, Zool. Jahrb., Syst. xxix. 1910, p. 417 (Albania). According to Tomasini, Wiss. Mitth. Bosn. Herz. ii. 1894, p. 570, this is the only form of *L. muralis* found in Bosnia.

Bedriaga * reports the typical form from various parts of Greece, and alludes to specimens with fire-red belly from the neighbourhood of Athens. The only specimen I have seen is from Lake Stymphalos, Northern Morea, presented by Mr. Norman Douglass, particulars of which are given in the above table. I may add that this specimen is rather above the average size, as may be seen from the following measurements, that the head-shields are absolutely typical, the dorsal scales oval-hexagonal, distinctly keeled, and larger than those on the flanks, the caudal scales truncate and moderately keeled, forming alternately longer and shorter whorls. The hind limb reaches the shoulder. Reddish grey above, with an interrupted vertebral series of dark spots and a lateral series of large dark reddish-brown spots, forming a chain and confluent with a band on the head and neck; lower parts with small black spots (Pl. XVI. fig. 5).

Measurements (in millimetres):—

From end of snout to vent	65
„ „ „ fore limb	27
Length of head	17
Width of head	10
Depth of head	8
Fore limb	24
Hind limb	38
Foot	19

* Bull. Soc. Nat. Moscou, lvi. Pt. ii. 1882, p. 97, and Abh. Senck. Ges. xiv. 1886, p. 216.

In specimens from Albania, according to Klaptocz, *l. c.*, the hind limb does not extend beyond the axil in males, the scales across the body vary between 45 and 57, and the femoral pores between 13 and 20.

Thanks to the courtesy of Prof. zur Strassen and Dr. Lehrs, I have examined the specimens from Prevesa in Epirus, in the extreme north of Greece, preserved in the Senckenberg Museum at Frankfort (Main), first referred by Boettger * to the typical form, with a remark as to their resemblance in form and coloration to *L. taurica*, and later referred to the var. *tiliguerta* †. These specimens have since been identified with *L. ionica* by Lehrs, and I regard them as belonging to *L. taurica*, of which *L. ionica* is, at most, a variety ‡. I append particulars of the two largest of these specimens :—

	1.	2.	3.	4.	5.	6.	7.
♂	65	55	28	10	26	21	27
♀	65	55	32	10	20	18–19	23

Var. BREVICEPS.

This variety, which I described in my previous contribution as doubtfully from Italy, occurs in Herzegovina, as has been pointed out to me by Dr. Werner, and I now think it very likely that the specimens in the Naples University Museum came from East of the Adriatic. On looking through the large collection of Lizards in the Florence Museum, I failed to find any that could be referred to this variety.

I append particulars of three specimens from Babaplanina, Herzegovina, for which I am indebted to Dr. Werner ; the first two form part of his private collection, the third is now in the British Museum.

	1.	2	3.	4.	5.	6.	7.
♂	64	45	28	8	22	15	22
♀	62	48	29	9	22	16	23
„	47	45	28	8	19	13–14	21

Dorsal scales large and flat, much larger than the scales on the flanks, round or roundish-hexagonal, very distinctly keeled. Caudal scales pointed behind, moderately keeled, very oblique, the whorls often very distinctly longer and shorter alternately (25 or 26 in the fourth whorl behind the postanal granules). Collar feebly serrated. Hind limb reaching wrist or elbow of adpressed hind limb ; foot not or but slightly longer than head. Black spots on belly absent, or (♂) confined to the sides.

* Ber. Senck. Ges. 1889, p. 270.

† Katal. Rept.-Samml. Senck. Ges. i. p. 85 (1893).

‡ P. Z. S. 1907, p. 557.

Measurements (in millimetres):—

From end of snout to vent	64	62
„ „ „ fore limb	21	21
Length of head	14	14
Width of head	8·5	8·5
Depth of head	7	7
Fore limb	19	18
Hind limb	28	27
Foot	15	14

In its short and convex head, in its feebly serrated collar, in its pointed caudal scales, as well as its larger temporal scales, the var. *breviceps* not only approaches *L. vivipara*, but also fills up to some extent the gap separating the typical *L. muralis* from the var. *fiumana*.

Var. HORVATHI.

Lacerta mosorensis, part., Méhely, Allantani Köslem. ii. 1903, p. 212.

Lacerta horvathi, Méhely, Ann. Mus. Hung. ii. 1904, p. 362, figs.; Allantani Köslem. iii. 1904, p. 193, pl. v.; Ann. Mus. Hung. iii. 1905, p. 298, and vii. 1909, p. 600, pl. xxiv. figs. 1–4 & xxv. figs. 5–8.

Of this form, from the Mountains of Croatia, four examples are preserved in the British Museum:—

1. ♂, one of the types.	Jasenak, Kapela Range.	Prof. L. von Méhely.
2–3. ♀.	„ „	„
4. ♀.	Kapela Range.	Dr. F. Werner.

Habit rather stout and depressed. Head much flattened, with short, obtuse snout. The hind limb, stretched forwards, reaches the axil or the shoulder in the male, the wrist or the elbow of the adpressed fore limb in the female; foot as long as or a little longer than the head.

The rostral does not touch the nostril, and forms a suture with the frontonasal; frontal short, usually as long as its distance from the rostral, sometimes as long as its distance from the end of the snout; a series of granules between the supraoculars and the supraciliaries, sometimes complete, rarely reduced to 5, the first and second supraciliaries being in contact with the supraocular *; parietal more or less distinctly emarginate on the outer border, where it forms a suture with a large anterior supratemporal, and usually in contact with the upper postocular; occipital usually shorter and narrower than the interparietal, sometimes extremely small. A single postnasal; anterior nasal often in contact with the anterior loreal †; four anterior upper labials

* In his original description (1904, p. 366) Méhely regarded the complete series of granules as "ein hervorragender Character" for the distinction of *L. horvathi* from *L. muralis*. See also my remarks under Forma *typica*, pp. 139, 143.

† As frequently happens in French specimens of *L. muralis* (see Tr. 1905, p. 354, and also above, p. 140).

(rarely five or three); temporal scales rather large, with a distinct masseteric disk, which is sometimes in contact with the last or penultimate upper labial.

Dorsal scales large, flattened, roundish-hexagonal or oval, smooth or faintly keeled, rather smaller on the sides, where 3 or 4 correspond to a ventral shield; 39 to 49 (usually 42 to 46) scales across the middle of the body; 22 to 31 scales, in the middle of the back, correspond to the length of the head. 23 to 27 gular scales in a longitudinal series; collar straight-edged, with 8 to 11 shields. Ventral shields in 6 longitudinal and 23 to 27 transverse series (23–25 in ♂, 25–27 in ♀); anal large, with a single semicircle of small shields. Scales on upper surface of tibia more or less distinctly keeled, considerably smaller than dorsals. 16 to 23 femoral pores (usually 16 to 18) on each side. 26 to 28 lamellæ under the fourth toe. Caudal scales truncate behind, more or less strongly keeled, often feebly keeled at the base of the tail, in alternately longer and shorter whorls.

Coloration of upper parts much as in *L. muralis typica*, sometimes with greenish gloss *. A vertebral series of dark dots is often present, sometimes forming a vertebral streak; lower parts pale yellow, sometimes washed with greenish, with or without small black or rust-coloured spots on the sides of the belly, which are always devoid of blue spots †. For fuller particulars of the coloration I refer to Prof. Méhely's detailed description, from which I have drawn as regards the variations in the lepidosis. The following is a tabulation of the numerical characters in the specimens examined by me:—

		1.	2.	3.	4.	5.	6.	7.
Jasenak.	♂, type	60	43	25	10	26	17	28
„	♀	64	41	27	9	24	18–17	26
„	„	59	45	26	8	25	17	26
Kapela.	„	57	49	26	10	25	17	27

Measurements (in millimetres) ‡:—

	♂.	♀.
From snout to vent	60	64
„ „ fore limb	23	24
Head	15	14
Width of head	10	9
Depth of head	7	6·5
Fore limb	23	21
Hind limb	34	34
Foot	18	17
Tail	?	115

* Which may also be observed in some typical *L. muralis*. *Cf.* Kammerer, Arch. Entwickmech. xxix. 1910, p. 462.

† As in some Caucasian specimens (var. *chalybdea*) on which Méhely has founded his var. *armenica*. These blue spots are also absent in many females of other varieties, and, though rarely, in some males also.

‡ If compared with the measurements of Bosnian specimens (above, p. 162), it will be seen that there is no justification for Méhely's statement (1909, p. 600) "Gliedmassen etwas kürzer" than in *L. muralis*.

This lizard is known only from S.W. Croatia (Kapela and Velebit ranges), where it inhabits wooded districts between 600 and 1100 metres altitude, often in company with the typical form of *L. muralis* and *L. vivipara*.

It bears some resemblance to *L. mosorensis* Kolomb.; in his original description (1904) Méhely regarded it as directly derived from that species (pp. 374 & 375), and in a somewhat later contribution (1905, p. 315) he is very positive about it: "So ist *Lacerta horvathi* nachweisbar der Abkömmling der dalmatinisch-hercegowinischen *Lacerta mosorensis*." At that time I pointed out (Tr. 1905, pp. 365–367, figs.) the agreement in many respects of *L. horvathi* with the Spanish-Portuguese var. *monticola* and the Asiatic vars. *saxicola*, *chalybdea*, and *depressa*. In Méhely's latest account (1909, p. 614) nothing more is said of the derivation of *L. horvathi* from *L. mosorensis*, but the former is held to be descended from *L. saxicola typica*: "Demgemäss kann *Lacerta Horváthi*, trotz ihrem scheinbar primitiveren Schädelbau sehr wohl von *Lacerta saxicola* typ. abgeleitet werden, mit welcher Art sie auch durch unverkennbare Beziehungen des Schuppenkleides und des Schädelbaues auf des Innigste verbunden ist. *Lacerta Horváthi* steht in jeder Beziehung auch zu *L. saxicola armeniaca*, so nahe, dass sie eventuell für eine etwas veränderte Form derselben betrachtet werden könnte, dennoch können diese beiden Formen miteinander naturgemäss nicht verbunden werden und müssen für parallele Entwickelungsformen gelten, die beide aus *Lacerta saxicola typ.* hervorgegangen und vielleicht in ähnlich beschaffenen Gegenden, zufolge der Einwirkung ähnlicher klimatischer Verhältnisse oder einer ähnlichen Lebensweise zustande gekommen sind." Except for the derivation from *L. saxicola*, which Prof. Méhely may perhaps entirely abandon in his next attempt at the "Lösung der Muralis-Frage," I entirely agree with the above statement, and in view of the state of things in the Spanish-Portuguese vars. *bocagii* and *monticola*, it is needless to say that I can only regard *L. horvathi* as one of the numerous forms or varieties of *L. muralis*.

Two of the specimens received from Prof. Méhely are figured on Pl. XX. figs. 1 & 2.

Var. FIUMANA.

Lacerta muralis, var. *neapolitana*, subvar. *a*, part., Bedriaga, Bull. Soc. Zool. France, 1879, p. 202, pl. ix. fig. 5.

Lacerta muralis neapolitana, subvars. *a* & *e*, part., Bedriaga, Abh. Senck. Ges. xiv. 1886, pp. 221, 226.

Lacerta muralis neapolitana, vars. *fiumana*, *olivacea*, et *striata*, Werner, Verh. zool.-bot. Ges. Wien, xli. 1891, p. 753, and Rept. Amph. Oesterr.-Ung. p. 42 (1897).

Lacerta muralis, vars. *campestris* et *olivacea*, Tomasini, Wiss. Mitth. Bosn. Herzeg. ii. 1894, p. 570.

Lacerta muralis neapolitana, var. *littoralis* Werner, Rept. Amph. Oesterr.-Ung. p. 161 (1897), and Wiss. Mitth. Bosn. Herzeg. vi. 1899, p. 819.

Lacerta littoralis Lehrs, Zool. Anz. 1902, p. 230; Werner, Verh. zool.-bot. Ges. Wien, lii. 1902, pp. 382 & 384.

Lacerta littoralis, var. *livadiaca* Werner, Verh. zool.-bot. Ges. Wien, lii. 1902, p. 383.

Lacerta fiumana Werner, Bl. f. Aq.- u. Terr.-K. xvi. 1905, p. 65, and Wiss. Mitth. Bosn. Herzeg. x. 1907, pp. 660 & 666; Kammerer, Arch. f. Entwicklmech. xxix. 1910, p. 474, pl. xv.; Klaptocz, Zool. Jahrb., Syst. xxix. 1910, p. 417.

Lacerta fiumana, var. *imitans* Werner, Mitth. Naturw. Ver. Univ. Wien, vi. 1908, p. 49.

I will first give a description of the widely distributed form, from the Austrian Littoral, Croatia, Dalmatia, Bosnia, Herzegovina, and Montenegro, and various islands on the coast of Istria and Dalmatia, to which the above synonymy pertains, and then refer to some insular forms which are evidently derived from it, and which have been described as vars. *lissana*, *melisellensis*, and *galvagnii*.

The typical var. *fiumana* which, in size and coloration, may be regarded as connecting the var. *campestris* with the forma *typica*, is hardly to be distinguished from the former, especially if compared with specimens from Piedmont, where the var. *campestris* does not reach so large a size as on the East Coast of the Adriatic. It is very easy to distinguish it from the var. *serpa* as occurring on the East Coast of the Adriatic and on several of its islands, but when Italian examples of the var. *campestris* are taken into consideration, the gaps between the two extremes disappear, and a continuous series connecting the two is seen to exist. This variety is also very closely related to *L. taurica* Pall., especially through the form described by Lehrs as *L. ionica*, as I have shown on a previous occasion *. Werner † has even hinted at the possible specific identity of his *L. fiumana* with *L. taurica* and *L. ionica*, as had been suggested by Wiegmann ‡, who alluded to this lizard under the name of *Podarcis merremii* Fitz., (non Merr.), a MS. name under which *L. fiumana* has often appeared in the past. However, the constant presence of pterygoid teeth in *L. taurica* § is, in my opinion, sufficient to retain that form as a species, which fills in the gap between the more primitive group of *L. agilis* and *L. viridis* and *L. muralis*.

The following description is almost a repetition of that of the var. *campestris*, and it is to me often a matter of difficulty to distinguish small specimens of that form from striated specimens of the var. *fiumana*. The number of scales across the body appears to be the most important diagnostic character, although there is an overlap.

Head small, its length $3\frac{3}{4}$ to $4\frac{1}{4}$ times in length to vent in males, $4\frac{1}{3}$ to $4\frac{3}{4}$ times in females; either flat above, as usual in the typical form, or as convex as in var. *campestris*, its depth equal to the distance between the anterior corner or the centre of the eye and the anterior border of the tympanum, its width once and a half to once and three-fourths in its length; snout obtusely pointed, as long as or a little longer than postocular part of head.

* P. Z. S. 1907, p. 557. † Bl. f. Aq.- u. Terr.-K. xvi. 1905, p. 74. ‡ Arch. f. Naturg. 1837, ii. p. 222.

§ I have not found these teeth in any specimens of var. *fiumana*, any more than in the typical form. They are rarely present in the vars. *campestris* and *serpa*.

Body not much depressed. The hind limb reaches the axil or the shoulder in males, the wrist or the elbow of the adpressed fore limb in females; foot a little longer than head (up to once and one fourth).

Tail rounded, once and three-fifths to twice and one-fifth length of head and body.

Rostral shield usually entering the nostril or narrowly separated from it *; nasals forming a suture behind the rostral; a single postnasal †; frontal as long as or a little shorter than its distance from the end of the snout; a series of granules between the supraciliaries and the two principal supraoculars, the anterior of which is usually in contact with the first, or with the first and second supraciliaries; parietals once and one-fifth to once and a half as long as broad, nearly always in contact with the upper postocular ‡; occipital very variable, usually shorter than and as broad as the interparietal, sometimes narrower, sometimes broader §; temporal scales sometimes as small as in a typical *L. muralis*, sometimes nearly as large as in a typical *L. taurica*, usually as in var. *campestris*; tympanic shield always distinct, and the masseteric usually so, the latter frequently in contact with the supratemporal, or separated from it by a single series of scales; four ‖ upper labials anterior to the subocular, the lower border of which is much shorter than the upper.

Collar-edge feebly but more or less distinctly serrated; 7 to 11 plates in the collar; gular fold very distinct; 20 to 28 scales and granules between the symphysis of the chin-shields and the median collar-plate.

Scales on the back oval-hexagonal or distinctly hexagonal, distinctly or sharply keeled, often smaller on the vertebral line; lateral scales as large as or a little larger than the dorso-laterals, usually more or less distinctly keeled ¶; 44 to 57 (usually 48

* Exceptions in a ♂ from Goritz (Schreiber) in Lataste Coll., and in a ♂ from Brestica, Herzegovina (Werner).

† Two superposed postnasals on one side in a ♂ from Scoglio Supetar (Werner Coll.).

‡ Exception in a ♀ from Solta, in one from Gelsa, and in one from Cettinje (Werner Collection); Klaptocz (*l. c.*) also records an exception in a specimen from Albania.

§ In a ♂ from Brestica, Herzegovina (Werner), the occipital is as long and twice as broad as the interparietal, whilst in a ♀ accompanying it the former shield is barely half as long and half as broad as the latter. A small shield is sometimes intercalated between the interparietal and the occipital; in a ♂ from Bukovici, the parietals meet in a short suture between these two shields; the three specimens from the Karst (Schreiber) in the Lataste Collection have a short transverse cleft in the parietal on each side of the interparietal.

‖ Three on one side in single specimens from Trieste (Werner), Bosnia (Floericke), Trebinje (Werner), and Zara (Spada Novak). Not one of the many specimens examined by me has five, a number which is sometimes found in specimens from Lagosta, and in as many as 10 per cent. of those from Melisello.

¶ Lehrs (*l. c.* p. 231) says "Rücken- und Flankenschuppen *gleich gross*, bis zu den Bauchschildern *deutlich gekielt*." There is no constancy in this character. In a female from Dalmatia (Spada Novak), of uniform olive coloration, the scales on the lower part of the flanks are considerably larger than the dorsals, and perfectly smooth. In various striated specimens, including the actual types from Fiume, I also find the lateral scales distinctly larger than the dorsals, and the keels often so faint as to be difficult to detect.

to 53) scales across the middle of the body; 3, or 2 and 3 transverse series of scales correspond to one ventral plate, 31 to 45 to the length of the head. Ventral plates in 6 longitudinal and 25 to 31 transverse series. Anal plate moderately large or rather small, with two semicircles of small plates; an enlarged median plate sometimes preceding the anal.

Scales on upper surface of tibia considerably smaller than the dorsals, always distinctly keeled. 22 to 29 (usually 24 to 27) lamellar scales under the fourth toe. 16 to 24 femoral pores on each side (usually 19 to 22).

Upper caudal scales strongly keeled and obtusely but distinctly pointed behind; the scales more or less oblique * with the keel parallel to the axis of the tail; the whorls more or less distinctly longer and shorter alternately; 28 to 32 scales in the fourth whorl behind the post-anal granules.

This lizard shows much variation in the coloration, and some of the colour-varieties appear to be fixed in certain localities.

A. Green or olive-brown above, with brown vertebral and lateral bands spotted with black; six light pale green or white streaks, viz., on each side, one bordering the vertebral band, one from the supraciliary border to the tail, along which it extends for some distance, and one from below the eye to the side of the tail, passing through the ear, above the fore limb, and through the hind limb. Lower parts white, unspotted, or with a series of black dots on the outer row of ventrals. Specimens thus coloured (var. *striata* Werner) are hardly distinguishable from the var. *campestris*, but, according to Werner the head is, as a rule, more depressed ("eher platy- als pyramidocephal"). The young is olive-brown, with six very sharply defined white lines. Most of the specimens referable to Werner's var. *striata* are females (Pl. XIX. fig. 3), but some males agree with it, at least in having the six light lines (Pl. XIX. fig. 4).

Specimens from Bosnia and Herzegovina are in the British Museum Collection. The types of var. *striata* are from Fiume, Spalato, Ragusa, Bol, and Gelsa. Strongly striated specimens from Northern Greece have been named var. *livadiaca* by Werner.

B. Specimens in which the back is green (olive-green to bluish-green) with black spots as in the preceding, but the white lines reduced to the dorsal-lateral, have been named var. *fiumana* by Werner (Pl. XIX. figs. 1 & 2). They are mostly males, with bright orange-red belly and blue spots on the outer ventral shields. From Fiume, Cherso, Veglia, Bragga, Lesina. Specimens from the Karst (Schreiber) are in the Lataste Collection. Specimens from Bosnia and Herzegovina, associated with the

* As in var. *campestris*. Count Peracca has pointed out to me that the scales in the anterior third of the tail of var. *campestris* are less oblique than in the f. *typica*, and more so than in the var. *serpa*, but he admits it is very difficult to draw up any absolute definition of these different types of caudal scales. That the character does not hold good in the typical form is well shown by the series at my disposal from Belgium, where surely only one form of *L. muralis* exists.

form A, are in the British Museum. Males from Fiume, types from Dr. Werner's Collection, have the belly dotted all over with black. A blue, black-edged ocellus is sometimes present above the shoulder.

C. Uniform green, dark green, or reddish-brown specimens without any markings (var. *imitans* Werner), similar in this respect to the individuals of Italian varieties named var. *olivacea*, but with the throat and breast, or the whole of the lower parts, orange or red in the males at least, occur in Istria, Dalmatia, and Herzegovina, and on the islands of Lussin, Cherso, Veglia, Bua, Solta, Lesina, Brazza, and Meleda. Some individuals, however, show more or less distinct traces of the light dorso-lateral streak, whilst others with a few black spots on the sides establish the connection with the colour-variations described above. Some male specimens from Istria, which I received alive, were of a bright grass-green on the back, of a golden colour on the head, sides, and limbs, and of a bright orange beneath (Pl. XIX. fig. 5).

Measurements (in millimetres) :—

	Fiume, types.		Bosnia.		Bukovici.		Meleda.
	♂.	♀.	♂.	♀.	♂.	♀.	♂.
From end of snout to vent . . .	63	55	61	54	55	52	66
„ „ fore limb .	25	20	24	19	21	18	25
Length of head	15	12	15	12	13	11	16
Width of head	10	8	9	7·5	8	7	10
Depth of head	9	6	8	6	7	6	8
Fore limb	20	16	19	16	17	15	21
Hind limb	33	26	33	25	29	25	37
Foot	18	15	17	14	16	14	20
Tail	117	?	128	88*	?	87	?

* Reproduced.

In the following tabulations, the size and scaling of some of the specimens examined are recorded. W. indicates that the specimens are preserved in Dr. Werner's Collection, L. in M. Lataste's Collection.

			1.	2.	3.	4.	5.	6.	7.
L.	Goritz	♂	53	49	26	7	26	21	27
L.	Karst	♀	51	48	30	10	25	21–20	26
L.	„	„	51	51	30	9	24	21–20	26
	Trieste	♂	61	52	26	10	24	22–23	29
	„	♀	67	51	28	10	22	17–16	26
	Fiume, Istria (type) . .	♂	63	49	25	9	26	19–20	27
W.	„ „ „ . .	♀	55	45	30	8	23	19–20	24
	Cherso Id., Istria . .	♂	60	55	27	11	25	21–22	25
W.	„ „ . . .	„	60	53	28	10	28	19–21	28
W.	Lussin Id. „ . . .	„	59	53	29	12	25	22–21	28

			1.	2.	3.	4.	5.	6.	7.
	Dalmatia	♀	50	53	31	9	28	22–23	28
W.	Ragusa, Dalmatia . .	„	55	44	29	9	20	19–18	24
	Solta Id., „ . . .	„	54	51	29	11	24	21–22	26
	Brazza Id., Dalmatia .	♂	51	51	25	11	24	22	25
W.	Bol, Brazza Id., „ . .	♀	55	49	28	9	25	19–21	26
W.	Meleda Id., „ . .	♂	66	58	27	8	24	21–22	29
W.	Scoglio Supetar, „ . .	♂	61	50	26	9	24	21–22	26
W.	„ „ „ . .	♀	54	50	30	8	25	24–22	26
	Bosnia	♂	61	48	25	9	21	22–23	25
	„	♀	54	51	30	10	25	23–22	26
	Capljina, Herzegovina .	♂	55	53	25	10	24	21–20	23
	„ „ . .	♀	51	57	29	9	24	21–22	26
	Bukovici, „ . .	♂	55	56	27	10	24	23–22	25
	„ „ . .	♀	52	50	29	7	21	22–21	24
	Brestica, „ . .	♂	54	47	27	9	23	22	27
	Trebinje, „ . .	„	60	50	26	9	26	22–21	25
	„ „ . .	„	54	50	26	9	24	21–19	22
W.	Cettinje, Montenegro .	„	59	53	26	9	22	22	25
W.	Njegus, „ . .	♀	64	48	30	9	22	19	24

A. Klaptocz has recorded the abundance of this lizard in North Albania, in the plain in the neighbourhood of Shkodra, whilst the typical *L. muralis* alone occurs in the town itself and in the mountains up to 1000 metres altitude. The scales across the body are stated to vary between 40 and 63, the femoral pores between 15 and 25, a range of variation which exceeds that mentioned by me, and fills up the gap between vars. *fiumana* and *melisellensis*, so far as these characters are concerned.

Var. LISSANA.

(Lissa and Lagosta.)

Lacerta muralis fusca, var. *lissana* Werner, Verh. zool.-bot. Ges. Wien, xli. 1891, p. 752, and Rept. Amph. Oesterr.-Ung. p. 51 (1897).

Lacerta litoralis, var. *lissana* Werner, Verh. zool.-bot. Ges. Wien, lii. 1902, pp. 383 & 384; Scherer, Bl. f. Aq.- u. Terr.-K. xv. 1904, p. 193.

Lacerta fiumana, var. *lissana* Werner, Mitth. Naturw. Ver. Univ. Wien, vi. 1908, pp. 45 & 46.

The lizard of Lissa, which, as recognised by Dr. Werner, is hardly separable from that of Lagosta, was first regarded as belonging to the group of the *L. muralis typica* (*fusca* Bedriaga), but as establishing a connection between it and the *L. fiumana*, referred at the time to Bedriaga's *neapolitana* group.

I agree that it is nearer to the var. *fiumana* than to any other, yet as it differs by an average higher number of lamellæ under the fourth toe, viz., 25 to 31, usually 28,

instead of 22 to 29, usually 24 to 26, as well as by an average larger size, I think it may perhaps be kept distinct from that widely distributed form.

According to Werner, the Lissa Lizard is never green, does not even show a trace of green. Upper parts grey or coffee-colour, the dorsal region unspotted or with dark brown spots or marblings, sometimes separated from the much spotted lateral region by a light streak; a dark vertebral streak, formed of a series of spots, which does not begin behind the occiput, but further back, about the middle of the body. In males the belly is red, without spots, except on the sides, which bear large blue spots on the outer row of ventral shields; in females it is white.

This description applies also to the lizards from Lagosta, except that the upper parts may be green, that some among them have the dark vertebral streak originating on the nape, and that others have the markings very indistinct. The blue spots on the sides of the belly may occupy the whole outer series of shields, forming a continuous broad band.

Male specimens, stated to be from Lissa, which I received alive through the great kindness of M. G. de Southoff, of Florence, had the nape and the anterior part of the back light green, the upper surface of the head, the sides, the limbs, and the tail brown; two or three blue ocelli above the shoulder; large blue spots on the outer row of ventrals, in one specimen forming a continuous band; throat and belly white, or yellow tinged with orange.

I have examined the following 14 specimens, all except the fifth and sixth (M. de Southoff) from Dr. Werner's Collection:—

	1.	2.	3.	4.	5.	6.	7.
Lissa, ♂, type	65	55	28	9	28	23–24	28
„ „ „	61	51	25	8	24	25–24	28
„ „ „	52	53	26	8	24	22–24	27
„ „ „	52	54	25	9	29	26–24	31
„ „	58	52	25	9	25	25	28
„ „	58	52	26	8	23	23–24	25
Lagosta, ♂	66	55	28	11	29	24–23	28
„ „	64	52	27	8	25	23–24	27
„ „	64	55	26	10	28	23	28
„ „	62	52	26	10	25	22–23	28
„ „	62	53	26	9	26	21–22	28
„ „	61	52	26	9	24	22–23	27
„ „	58	54	26	9	26	25–24	28
„ ♀	53	53	28	9	25	24–23	27

A description of the form and scaling would be almost entirely a repetition of that of the var. *fiumana*. I will only observe that, whereas the collar is feebly serrated in the specimens from Lissa, as in var. *fiumana*, it is entire in those from Lagosta. The

size is larger than usual in var. *fiumana*. The temporal scutellation is variable, and the masseteric disk may be absent, but as a rule it is large and in contact with the anterior supratemporal. The occipital is usually small or very small, and is sometimes pointed in front, or even separated from the interparietal, a feature which appears to be the rule in the black form occurring on Melisello. Only one specimen has 5 anterior labials, and on one side only. The scales on the back are distinctly keeled; they may slightly increase in size and completely lose the keels on the lower part of the flanks; the caudal scales are truncate rather than pointed.

Measurements (in millimetres):—

	Lissa.	Lagosta.	
	♂.	♂.	♀.
From end of snout to vent	65	64	53
„ „ „ fore limb	24	23	18
Head	16	16	12
Width of head	10	11	8
Depth of head	8	8	6
Fore limb	22	21	17
Hind limb	35	34	27
Foot	19	18	15
Tail	130	116	95

A male from Lissa (one of the types), and one from Lagosta, are figured on Pl. XIX. figs. 8 & 9.

Var. MELISELLENSIS.

(Melisello and St. Andrea, near Lissa.)

Lacerta melisellensis Braun, Arb. Zool. Inst. Würzb. iv. 1877, p. 49, pl. ii. fig. 4.

Lacerta muralis, var. *melisellensis* Bedriaga, Nature, xx. 1879, p. 481.

Lacerta muralis fusca, var. *melisellensis* Bedriaga, Abh. Senck. Ges. xiv. 1886, p. 197.

Lacerta muralis neapolitana, var. *merremi* (*melisellensis*) Werner, Verh. zool.-bot. Ges. Wien, xli. 1891, p. 754, and Rept. Amph. Oesterr.-Ung. p. 44 (1897).

Lacerta serpa, var. *melisellensis* Werner, Verh. zool.-bot. Ges. Wien, lii. 1902, p. 386.

Lacerta litoralis, var. *lissana*, forma *melisellensis*, Scherer, Bl. f. Aq.- u. Terr.-K. xv. 1904, p. 193, fig.

Lacerta serpa, var. *galvagnii* Werner, Mitth. Naturw. Ver. Univ. Wien, vi. 1908, p. 49.

There are few better examples of the difficulty of discriminating between the races of *Lacerta muralis*, which are so emphatically proclaimed by some authors to be entitled to specific rank, than that afforded by the black lizard of the Melisello Rock near Lissa, first described by Prof. Max Braun as *L. melisellensis*.

The view entertained by Bedriaga that the Melisello lizard is a black insular race of the typical *L. muralis* (his *L. muralis fusca*) would, in the light of our present information, be highly surprising, since it has been shown that the latter does not exist on Lissa nor on any of the islands off the coast of Dalmatia. Later, however, Werner and Lehrs pronounced it to be merely a melanic form of the var. *neapolitana* or *serpa*, which, at Capri, produces the *L. cærulea* or *faraglionensis*.

My reasons for dissenting from both these views are derived from the study of the scaling, to which previous authors had not paid sufficient attention when making their comparisons.

In describing this lizard, Braun had correctly mentioned and figured the larger scales, as compared with the var. *serpa*, and it will be seen by a glance at the tabulation that follows, to what extent it is so, the number of scales across the body being 50 to 64 (usually less than 60) in the Melisello lizard, and 62 to 75 in the var. *serpa* from the East Coast and islands of the Adriatic. The number of dorsal scales would be in favour of a derivation from the typical *L. muralis*, but against this we have the greater number of subdigital lamellæ under the fourth toe (25 to 30, usually 28). In these numbers, however, we have so complete an agreement with the form described as var. *lissana* (Sc. 51–54, lam. 27–31, usually 28), that, when I became acquainted with it, I at once felt convinced as to the identity of the two forms, which had already been pointed out by Scherer in 1904. All doubts as to the derivation of the var. *melisellensis* from the var. *fiumana* are removed by an examination of the lizards named var. *lissana*, which furnish the missing link.

In the following table particulars are given of the 19 specimens from Melisello examined by me. The first two specimens, for which I am indebted to the kindness of Dr. Steindachner, form part of the series out of which Prof. Braun's original types were obtained. The last eight belong to Dr. Werner's Collection.

These first two specimens appear also in the first two columns of the table of measurements.

	1.	2.	3.	4.	5.	6.	7.
♂	50	52	25	10	27	23–22	29
♀	58	54	29	8	27	25–23	25
♂	73	62	28	10	27	22–24	28
,, ...	68	59	25	9	29	23	28
,, ...	65	64	24	11	29	22–23	30
,, ...	65	63	26	11	32	23	28
,, ...	65	60	25	10	31	27	28
,, ...	63	60	25	10	29	22–23	30
,, ...	63	57	26	8	25	23–24	28
,, ...	61	58	26	9	28	23	28
♀	56	56	27	8	26	21–22	28
♂	74	58	24	10	29	22	27
,, ...	70	55	25	9	30	23–24	30
,, ...	65	52	25	8	28	24–23	?
,, ...	60	56	26	9	30	24	28
,, ...	58	52	25	10	26	23–24	29
♀	60	50	28	8	30	24–23	28
,, ...	59	53	29	8	27	24–23	27
,, ...	55	50	30	9	29	22–21	?

Measurements (in millimetres):—

	♂.	♀.	♂.	♀.
From end of snout to vent	50	58	73	60
„ „ „ fore limb	19	22	31	23
Length of head	14	13	17	14
Width of head	7	8	11	9
Depth of head	5·5	6	9	7
Fore limb	16	19	23	20
Hind limb	26	29	36	30
Foot	15	16	20	17
Tail	80	73 *	90 *	78 *

* Reproduced.

The size is often larger than in the var. *lissana*, but the proportions are the same. The hind limb reaches the shoulder or the collar in males, the elbow of the adpressed fore limb or the axil in females. The dorsal scales are usually less distinctly keeled, and those on the flanks are always smooth; 35 to 48 scales on the middle of the back correspond to the length of the head. Collar sometimes entire, sometimes feebly serrated. First and second supraciliaries in contact with the first supraocular. Masseteric disk large and often in contact with the supratemporal. 5 anterior upper labials in 10 per cent. of the specimens examined (on one side in six specimens, on both sides in one). This insular form has a tendency to lose the occipital shield, in fact, it is entirely absent in the first and fifth specimens of the above list; it is small and separated from the interparietal in 13 out of the 20 specimens examined, in which case the parietals form a short median suture, small and just touching the interparietal in 3, forming a narrow suture with the interparietal in 2.

Dark brown to nearly black above, with the markings of the var. *lissana* more or less distinct, at least in certain lights. Females have a black vertebral streak, sometimes light-edged, and a light dorso-lateral streak extends from the supraciliary edge to the tail; males have more the style of markings represented in the specimen from Lagosta (see Pl. XIX. fig. 10). The lower parts are black, or of a blackish steel-blue, with pale blue spots on the sides; in the males these blue spots are large and often form a continuous band along the outer row of ventral shields, in the females they are small or very indistinct. The broken tail is sometimes regenerated black or blackish, but more often brown above and whitish beneath.

According to Scherer, the young do not differ from the lizards of Lissa in colour.

Specimens from the Scoglio Kamik, west of St. Andrea, near Lissa, have been named var. *galvagnii* (Werner, Mitth. Naturw. Ver. Univ. Wien, vi. 1908, p. 49). They differ from the Melisello lizards in the absence of blue on the sides of the belly, being uniform black or blackish. By their heavy form and thick tail, they remind one of the var. *lilfordi* melanos, but the scaling is the same as in var. *melisellensis*,

as the following tabulation of the two type specimens in Dr. Werner's Collection shows:—

	1.	2.	3.	4.	5.	6.	7.
♂	72	54	26	10	27	25–26	28
„	70	53	27	10	28	24	29

In both specimens the occipital is small and separated from the interparietal. In the larger specimen, figured on Pl. XIX. fig. 11, the masseteric disk is small on one side and absent on the other.

Measurements (in millimetres):—

From end of snout to vent	72
„ „ „ fore limb	30
Head	19
Width of head	12
Depth of head	10
Fore limb	25
Hind limb	37
Foot	21
Tail (reproduced)	105

Vars. CAMPESTRIS De Betta and SERPA Raf.

What I have said of these two forms *à propos* of Italy (Tr. 1905, p. 388) applies equally to the East Coast of the Adriatic, where the former passes into the latter from north to south, thus presenting the same difficulty for their sharp distinction, which accounts for the fact that they have been confounded under one name by Bedriaga (*L. muralis neapolitana*) and by Werner (*L. muralis*, var. *merremii* or *L. serpa*). All the large green Wall-Lizards from the mainland of Istria and most of the islands between Istria and Croatia, are unhesitatingly referable to the var. *campestris* of De Betta, their habitat being uninterruptedly connected with that of the original specimens (from Venetia); in North Dalmatia (Zara) the two varieties occur together, whilst from South Dalmatia (Spalato) and the southern islands of the Adriatic (Cazza, Pelagosa Grande, Pelagosa Piccola), all the specimens I have been able to examine agree with the definition I have given of the var. *serpa*. The combination of characters (any one of which may exceptionally fail) on which I have based my determinations of these easternmost representatives of the two varieties, *campestris* and *serpa*, are, for the former as distinguished from the latter, the denticulated collar, the broader and more pointed caudal scales, and, as a rule, a shorter head, larger scales (53 to 62 across the body and 22 to 28 along the throat as against 60 to 78 and 25 to 38), and fewer lamellar scales under the fourth toe (25 to 29 as against 27 to 32), and also the relation of the rostral shield to the nostril, as I have mentioned in

Italian specimens; whilst in only one case (♂ from Pelagosa Grande) have I observed the rostral entering the nostril in the specimens referred to the var. *serpa*. Size and markings are no safe guides to the determination any more than in those parts of Italy (the Roman province) where the two forms seem to intermingle. I will only observe that the subvars. *a*, *b*, *f*, of Werner* are referable to the var. *campestris*, *d* & *e* to the var. *serpa*, whilst *c* embraces both.

Var. CAMPESTRIS.

Lacerta muralis neapolitana, var. *merremii*, part.†, Werner, Rept. Amph. Oesterr.-Ung. p. 43 (1897).

Lacerta serpa, Werner, Verh. zool.-bot. Ges. Wien, lii. 1902, p. 382.

In the following tabulation of specimens examined, those in Dr. Werner's private Collection are marked W.

			1.	2.	3.	4.	5.	6.	7.
W.	Grado, Gulf of Trieste	♂	63	61	26	11	26	21–20	27
W.	Trieste	,,	71	62	25	11	25	18	27
	,,	,,	70	53	28	9	25	17–18	25
	,,	,,	68	62	26	10	27	18–19	27
W.	,,	♀	65	59	27	11	24	17–19	27
W.	,,	,,	57	62	30	9	26	17–18	26
W.	Capo d'Istria	♂	63	58	27	11	26	22–23	29
W.	Pola, Istria	,,	80	53	27	11	25	18	27
	,, ,,	,,	72	53	27	11	24	20–19	27
W.	,, ,,	♀	65	54	29	11	22	17–18	28
W.	Sansego Id., Istria	♂	69	60	27	11	24	20–19	29
	,, ,,	,,	68	59	26	11	26	20–19	28
W.	,, ,,	,,	67	62	27	11	28	23–24	29
	,, ,,	,,	63	62	25	10	25	22	29
W.	,, ,,	,,	60	57	26	11	25	19–21	28
W.	,, ,,	,,	58	59	25	10	26	20–17	26
W.	,, ,,	♀	63	61	29	10	25	19	28
	,, ,,	,,	63	58	29	9	25	20–19	27
	,, ,,	,,	58	59	29	10	24	20	29
W.	,, ,,	,,	56	58	30	9	22	17–18	28
W.	Lussin Id., Istria	♂	72	55	26	11	25	20–18	29
	,, ,,	♀	67	50	30	9	27	18–19	29

* Rept. Oesterr. pp. 43, 44.

† Non *L. merremii* Risso (= *L. muralis* typ.). *L. merremii* Fitzinger is a *nomen nudum* which has been used by Erber (Verh. zool.-bot. Ges. Wien, xvii. 1867, p. 855), Bedriaga, Werner, and others for this variety as well as for the vars. *fiumana* and *serpa*. *L. merremii* Schinz (Eur. Faun. ii. p. 25, 1846) is no doubt based on a young *L. viridis*, var. *major*.

			1.	2.	3.	4.	5.	6.	7.
	Zara, Dalmatia	♂	78	58	26	10	24	18–19	27
	„ „	„	78	56	27	9	27	19–21	26
	„ „	„	73	61	28	12	25	23–24	28
	„ „	„	73	55	27	10	27	20–21	25
	„ „	♀	75	58	31	9	28	23	29
W.	„ „	„	70	54	29	11	28	18	26
W.	„ „	„	69	57	29	9	25	20–21	29
	„ „	„	60	56	28	9	23	19	26
	„ „	„	56	56	30	8	26	18–19	27
	„ „	„	49	53	28	10	22	18	25

Measurements (in millimetres):—

	Trieste.		Zara.	
	♂.	♀.	♂.	♀.
From end of snout to vent	71	65	78	75
„ „ „ fore limb . .	30	22	31	26
Length of head	20	15	20	15
Width of head	12	9	12	10
Depth of head	10	8	10	8
Fore limb	27	21	27	23
Hind limb	43	33	44	37
Foot	23	17	24	20
Tail	150	?	127	120

I have little to add to the description given of this variety from Italian specimens *. I will only observe that the scales on the flanks may be a little larger than the dorso-laterals, that minute scales may be present behind the anal plate †, as described by Méhely in *L. anatolica* and *L. danfordi*, and record the following exceptions to the normal lepidosis:—Two postnasals on one side in a ♂ from Zara; series of granules between the supraoculars and the supraciliaries complete in three specimens (Grado, Zara), sometimes reduced to 3 or 4 (Sansego, Zara); masseteric disk sometimes very small or indistinct (Sansego); anterior temporal in contact with fourth supra-ocular in three specimens from Sansego ‡ (Pl. XX. fig. 5).

As regards coloration, some specimens conform strictly to the description of De Betta, others approach very closely the specimen of var. *serpa* from Pompeii figured by me §,

* Tr. 1905, p. 390.

† One ♂ from Pola, one ♀ from Zara.

‡ I have given a figure of one of these three specimens in Ann. & Mag. N. H. (8) v. 1910, p. 250. This Méhely regards as an abnormal specimen, "dessen Supratemporalschild keine Bedeutung beigemessen werden kann. Ich bin überzeugt, das sich Herr Boulenger lange bemühen müsste, um noch ein Stück mit ähnlicher Pholidose zu finden" (Ann. Mus. Hung. viii. 1910, p. 227).

§ Tr. 1905, pl. xxviii. fig. 3.

whilst two from Sansego are uniform greyish olive (*L. serpa*, var. *olivacea* of Werner).

The specimens figured on Pl. XX. are from Pola (fig. 3) and Sansego (figs. 4, 5).

Var. SERPA.

Lacerta muralis neapolitana, part., Bedriaga, Abh. Senck. Ges. xiv. 1886, p. 220.
Lacerta muralis neapolitana, var. *pelagosæ* Bedriaga, t. c. p. 227.
Lacerta muralis neapolitana, var. *merremii*, part., Werner, Rept. Amph. Oesterr.-Ung. p. 43 (1897).
Lacerta serpa, var. *pelagosæ* Werner, Verh. zool.-bot. Ges. Wien, lii. 1902, p. 384.
Lacerta serpa, var. *adriatica* Werner, t. c. p. 386.

			1.	2.	3.	4.	5.	6.	7.
	Arbe Id., Istria	♂	78	66	28	11	29	21	29
W.	„ „	♀	66	61	32	10	28	21	27
W.	Zara	♂	80	62	26	11	26	20–21	28
	„	„	72	70	25	9	36	23	32
	„	„	68	63	25	10	28	23	29
W.	„	♀	68	66	28	10	27	20–21	29
W.	„	„	65	64	28	9	25	20–22	28
W.	Spalato	♂	80	63	25	12	25	21–22	28
W.	„	♀	66	60	29	10	25	22–23	32
	Cazza Id., near Lissa . .	♂	66	75	25	11	34	24–23	30
	„ „ . .	„	63	76	26	9	31	24–25	?
	„ „ . .	„	62	71	26	11	35	20–22	28
W.	Pelagosa Grande	„	72	63	27	10	29	24–23	30
	„	„	70	62	25	11	29	23–22	31
	„	„	69	69	26	9	34	24–25	30
W.	„	„	69	60	25	9	28	22–23	30
W.	„	„	66	66	24	7	29	23	29
W.	„	„	66	60	26	9	30	21–22	29
W.	„	♀	60	67	29	11	30	20–19	29
W.	Pelagosa Piccola	♂	70	78	27	10	38	24–25	30
W.	„	♀	59	72	30	12	35	22	31

The specimens from Pelagosa Grande represent Bedriaga's var. *pelagosæ*; those from Pelagosa Piccola are the types of Werner's var. *adriatica*.

The Dalmatian specimens (Pl. XX. fig. 6) are very similar to those from Southern Italy, but those from Pelagosa Grande and Pelagosa Piccola (Pl. XX. figs. 7, 8, & 9) are sufficiently different to have been regarded as distinct varieties.

The var. *pelagosæ* is described by Werner as of a remarkably light greenish-yellow or greenish-white ground-colour with deep black markings; the belly is usually white, but Bedriaga describes it as sometimes blue or bluish, and Werner found it red in one specimen, which colour also obtains in Sicilian specimens of the var. *serpa* (*sicula rubriventris* of Bonaparte). Young specimens are elegantly streaked, and so are some

female specimens. Males usually have a black vertebral stripe, straight or wavy, or a vertebral series of large black spots, separated from the spots on the sides by a narrower streak of the ground colour; these spots may form longitudinal series, coarse marblings, or cross-bars.

Measurements (in millimetres):—

	♂.	♀.
From end of snout to vent	70	54
„ „ „ fore limb	27	18
Length of head	19	13
Width of head	11	8
Depth of head	9	6
Fore limb	25	18
Hind limb	42	29
Foot	24	17
Tail	130	107

A female 48 mm. long from snout to vent is gravid.

As regards the scaling, I note the following departures from what is normal in the var. *serpa*. The series of granules between the supraoculars and the supraciliaries is usually complete; in 5 specimens out of 18 the parietal is not in contact with the upper postocular; one specimen has 5 anterior upper labials, and two lack the masseteric disk.

The var. *adriatica* is described by Werner as distinguished by a greyish-green or bluish-grey ground colour with the markings much less sharply defined, of a dark greyish brown. These markings consist of a dark vertebral stripe with round light spots, and a dark network on the sides enclosing round light spots; small dark spots on the head; belly greyish (in spirit).

Here follow the measurements (in millimetres) of the two type specimens:—

	♂.	♀.
From end of snout to vent	70	59
„ „ „ fore limb	27	22
Length of head	17	13
Width of head	10	8
Depth of head	8	6
Fore limb	22	19
Hind limb	38	29
Foot	19	15

One of these specimens is figured on Pl. XX. fig. 9.

4 or 5 rows of scales correspond to one ventral plate; the dorsal scales are round granules without distinct keel; the first supraocular is normal in the male, but is broken up into two or three granules in the female; the male has four anterior

upper labials on each side, the female has five; the masseteric disk is large in the male, small in the female; the collar-shields are small, as in var. *bedriagæ*.

The lizard of Cazza Island, near Lissa (3 specimens, received from Prof. Kolombatovič), comes very near to this variety as regards size and markings, which, however, may be described as black, and the belly is likewise grey in spirit, which perhaps indicates that it was red in life. It further agrees with the specimens from Pelagosa Piccola, in the small size of the collar-plates, the presence of five upper labials on both sides in one specimen and on one side in the other, and in the fine granular scaling (71–76 scales as against 60–70 in specimens from the Dalmatian mainland and Pelagosa Grande). If the var. *adriatica* be regarded as worthy of recognition, the specimens from Cazza should be referred to it.

VIII.—GREEK ARCHIPELAGO.

Var. ERHARDI.

Lacerta muralis, part., Erhard, Faun. Cyclad. p. 80 (1858).

Lacerta pardalis (non Licht.) Erhard, op. cit. p. 81.

? *Lacerta muralis*, var. *archipelagica* Bedriaga, Die Faraglione-Eidechse, p. 18 (1876).

Lacerta muralis fusca, part., Bedriaga, Bull. Soc. Nat. Mosc. lvi. 1882, p. 97.

Lacerta muralis fusca, var. *milensis* et *erhardii* Bedriaga, l. c. pp. 98, 99, and Abh. Senck. Ges. xiv. 1886, pp. 194 & 195.

Lacerta muralis neapolitana, part., Bedriaga, l. c. p. 99.

Lacerta muralis fusca, vars. *naxensis* et *nigrogularis* Werner, Wiss. Mitth. Bosn. Herzeg. vi. 1899, p. 835.

The Wall-Lizards of the Greek Archipelago, which I here group together under the name of var. *erhardi*, whether brown or green, resemble *L. campestris* in the shape of the head, the greatest depth of which equals the distance between the anterior border or the centre of the eye and the tympanum; the snout is short and obtusely pointed. The hind limb reaches the axil or the shoulder in males, the elbow of the adpressed fore limb in the females. Foot a little longer than head.

The rostral shield is always excluded from the nostril; the series of supraciliary granules is sometimes complete, but as a rule the first, or the first and second supraciliaries are in contact with the second supraocular; the parietals are only a little longer than broad, and in contact with the upper postocular; the temporal scales are usually small and granular, with distinct tympanic and masseteric shields; one, two, or three large supratemporals; occipital usually shorter and broader than the interparietal *; four is the usual number of upper labials anterior to the subocular †.

* In a male specimen from Syra (L. Müller) the interparietal and occipital are separated from each other, the parietals forming a suture between them, as frequently happens in var. *melisellensis*.

† 5 on both sides in a ♂ from Mykonos, 3 on one side in a ♂ from Petali.

Collar not serrated, with 9 to 11 plates, which may be very small; gular fold very distinct; 28 to 35 scales and granules between the symphysis of the chin-shields and the median collar-plates.

Dorsal scales small, granular, round or oval, smooth, rarely faintly keeled, equal in size, 54 to 63 across the middle of the body; 3 and 4 series corresponding to one ventral plate, 38 to 56 to the length of the head.

Ventral plates in 6 longitudinal and 26 to 34 transverse series. Præanal plate moderate, with one or two semicircles of small plates.

Scales on upper surface of tibia feebly keeled, considerably smaller than dorsals. 18 to 26 femoral pores on each side (usually 21–24). 26 to 33 lamellar scales under the fourth toe.

Upper caudal scales truncate and very obtusely, very feebly, diagonally keeled; 28 to 38 scales in the fourth whorl behind the postanal granules.

Specimens identical in form and scaling differ very considerably in the coloration.

The form which has been referred to *L. muralis fusca* * is brown or grey above, with small black spots, which may form two or three longitudinal series on the back and reticulations on the side, the back being separated from the side by a streak of the light ground colour; some specimens with very small dark dots, or nearly uniform; no very distinct markings on the tail; lower parts whitish, unspotted. The largest specimen measures 67 mm. from snout to vent.

In the var. *milensis* Bedriaga † the upper parts are pale brown, the sides yellow or greenish yellow, with black marblings often forming cross-bars; blue ocelli above the shoulder. Belly bluish, with or without large black spots; throat often black with round light spots (Pl. XXI. fig. 3). Werner's var. *nigrogularis*, also from Milos, differs in having a black vertebral stripe or series of spots. From snout to vent 57 mm.

Bright green specimens (Pl. XXI. figs. 1 & 2), with the markings as in the specimens described first, and with or without a black vertebral stripe, have been referred by Bedriaga to *L. muralis neapolitana* ‡. Belly white or orange.

The largest specimen measures 71 mm. from snout to vent.

Bedriaga observes that specimens from Tenos, Syra, and Phanar are green on the anterior part of the back, or only on the neck, and grey-brown or greyish green on the rest of the back. In all these colour-variations, large blue or blue-green spots are present on the outer row of ventrals.

* Also var. *naxensis* Werner. The specimens before me are from Petali (Bedriaga), Tenos (Bedriaga), and Naxos (Werner). These specimens often bear a strong superficial resemblance to lizards of the var. *quadrilineata* from Corsica.

† Type specimens of vars. *milensis* and *nigrogularis* from Milos and Erimomilo are preserved in the British Museum.

‡ Specimens from Syra, Mykonos, and Santorini have been received from Herr L. Müller.

The var. *erhardi* Bedriaga, from Seriphos, is described as similar to the first variety, but with three or four yellowish-green streaks on the body, these streaks lemon-yellow on the neck; the throat lemon-yellow.

And, finally, Erhard describes two further varieties:—(1) Black above and beneath, with rows of green spots on the back (var. *archipelagica*, Bedriaga). (2) Reddish brown on the back and tail, green on the head and neck, yellow beneath; five large cobalt-blue spots on each side of the body. The localities for these varieties are not stated.

The following are particulars of the specimens in the British Museum:—

		1.	2.	3.	4.	5.	6.	7.
Petali, Eubœa (Bedriaga) . . .	♂	63	57	28	11	34	23	29
Tenos, Cyclades „ . . .	„	67	57	28	10	35	21–20	30
Mykonos, Cyclades (L. Müller) .	„	71	63	29	11	35	24	28
„ „ „ . .	♀	60	60	31	9	31	22	27
Syra, Cyclades „ . .	♂	65	56	27	9	30	23–22	29
Naxos, Cyclades (Werner) . .	„	69	57	27	9	31	21	27
(Type of v. *naxensis*.)								
„ Cyclades (Werner) . . .	♂	63	57	29	11	31	21	26
„ „ „ . . .	„	58	59	28	11	29	22–23	28
„ „ „ . . .	♀	60	59	32	11	31	22–21	29
„ „ „ . . .	„	57	56	34	9	32	23	29
Santorini, Cyclades (L. Müller) .	♂	63	56	27	11	32	22	29
„ „ „ .	„	62	61	28	9	33	22–23	33
„ „ „ .	„	60	55	30	11	33	21	31
„ „ „ .	♀	64	57	31	10	30	22	27
Milos, Cyclades (Bedriaga) . .	♂	57	56	28	11	34	26	26
(Type of v. *milensis*.)								
„ Cyclades (Bedriaga) . .	„	54	54	26	9	28	24	28
Erimomilo, Cyclades (Werner) .	♀	55	55	31	9	33	24	27
„ „ „ .	„	55	54	31	10	28	19–18	27

Measurements (in millimetres):—

	1.	2.	3.	4.	5.
From end of snout to vent . . .	71	60	63	57	55
„ „ „ fore limb .	28	23	24	22	20
Length of head	19	14	16	16	13
Width of head	12	9	11	10	8
Depth of head	10	7	9	8	$6\frac{1}{2}$
Fore limb	23	20	22	19	17
Hind limb	39	30	34	32	27
Foot	21	17	18	18	15
Tail	97*	76*	108	115	69*

1. ♂, 2. ♀. Mykonos (L. Müller). 3. ♂. Petali (Bedriaga). 4. ♂. Milos (Bedriaga). 5. ♀. Erimomilo (Werner).

* Tail reproduced.

Specimens from Crete, of which I have examined two only (hgr. ♂ & ♀), presented to the British Museum by Miss Dorothy Bate, agree with the Cyclades form in the shape of the head and in the smooth dorsal scales, but differ in the rostral entering the nostril. The numbers of scales and pores are here given for comparison :—

	1.	2.	3.	4.	5.	6.	7.
♂	50	56	27	10	31	20–19	27
♀	58	57	28	11	30	20–21	25

Grey above, with a dark brown, light-edged lateral band; a black-and-white ocellus above the shoulder; lower parts bluish (in spirit).

More specimens are required to decide whether the Crete lizard deserves a varietal name. At present it cannot be identified with any variety with which I am acquainted. Bedriaga (*op. cit.* p. 216) refers it to *L. muralis fusca*: "Auf Kreta kommt eine *rubriventris* mit schön ausgeprägten Linien auf den Rumpfseiten und üppig gezeichnetem Rücken in Gemeinschaft mit der typischen *fusca* vor."

IX.—SOUTHERN RUSSIA, CONSTANTINOPLE, ASIA MINOR, AND NORTHERN PERSIA.

Some years ago, when dealing with the history of the so-called *Lacerta depressa* of Camerano *, I made some general remarks about the Wall-Lizards of this area, and distinguished the following forms as varieties:—

Var. *chalybdea* Eichwald (*depressa* Werner).
Var. *saxicola* Eversmann.
Var. *depressa* Camerano (*modesta* Bedriaga, *defilippii* Boettger).
Var. *portschinskii* Kessler (*depressa* part., Camerano).
Var. *defilippii* Camerano (*persica* Bedriaga, *depressa*, part., Camerano).
Var. *rudis* Bedriaga (*depressa*, part., Camerano).

All these were then known to me from autopsy. There remained one form, first described by Berthold as *L. hieroglyphica*, and since referred by Werner to *Lacerta serpa*, on which I could offer no opinion.

The view I took of the division into varieties is, on the whole, confirmed by the descriptions, based on a larger material, since published by Prof. Méhely. I must take objection, however, to the manner in which reference has been made † to my publication entitled "On the *Lacerta depressa* of Camerano," the object of which was to show that a number of distinct forms, varieties I called them, had been included under that name by Camerano and others, and I distinctly pointed out that the name *depressa* should, in my opinion, be restricted to two of the specimens out of the six on which

* P. Z. S. 1904, ii. p. 332.
† Ann. Mus. Hung. vii. 1909, p. 409.

the species was established. I am therefore surprised to find my *L. muralis*, var. *portschinskii*, and my *L. m.* var. *rudis*, referred to by Méhely in his synonymies as *L. muralis*, var. *depressa*, as well as to miss all allusion to my identification of *L. defilippii*, which should have been quoted as *L. muralis*, var. *defilippii*.

Remarks will be made further on concerning the names given by Méhely to the varieties here dealt with. *L. derjugini* Nikolsky and *L. chlorogaster* Boulenger (which name has priority over *L. boettgeri* Méhely) appear to me to be entitled to rank as species distinct from *L. muralis*.

The forms dealt with here may be briefly defined as follows :—

A. Var. *chalybdea* Eichw. Hind limb short, reaching the elbow or the axil in the male, not beyond the elbow in the female; foot not or but slightly longer than head. Granules between the supraoculars and the supraciliaries usually forming an incomplete series, sometimes reduced to 3. Dorsal scales smooth, larger than tibials, 40 to 53 across middle of body. Femoral pores usually fewer than 20. 24 to 28 scales under the fourth toe. From snout to vent up to 75 mm. Transcaucasia, Asia Minor, Mesopotamia.

B. Var. *saxicola* Eversm. Hind limb longer, foot longer than head. Granules between supraoculars and supraciliaries forming a complete series. Dorsal scales smooth, not larger than tibials, 50 to 65 across middle of body. Femoral pores 16 to 22. 25 to 31 scales under the fourth toe. From snout to vent up to 80 mm. Crimea, Cis- and Transcaucasia, Asia Minor.

C. Var. *portschinskii* Kessl. Like the preceding, but smaller and more slender, with more pointed snout. Dorsal scales smooth, as large as or larger than tibials, 51 to 56 across middle of body. 26 to 31 gular scales. Femoral pores 16 to 21. Not known to exceed 57 mm. from snout to vent. Transcaucasia.

D. Var. *defilippii* Camer. Proportions more as in the preceding. Dorsal scales smooth, as large as or larger than tibials, 46 to 53 across middle of body. Caudal scales usually feebly keeled. 22 to 25 gular scales. Femoral pores 14 to 20. Size as in the preceding. Transcaucasia and Northern Persia.

E. Var. *rudis* Bedr. Dorsal scales more or less distinctly keeled, 45 to 58 across middle of body; tibial scales much larger, strongly keeled; caudal scales almost spinose on the sides. 25 to 34 gular scales. Femoral pores 15 to 23. From snout to vent up to 87 mm. Transcaucasia.

These varieties completely merge into one another, and the definitions are necessarily somewhat vague and unsatisfactory. They might all be thrown together under the name of *L. chalybdea*, which has priority over that of *saxicola* adopted by Méhely. Although *L. chalybdea*, in this extended sense, might be regarded as sufficiently distinguished from the forms of *L. muralis* inhabiting South Eastern Europe to justify its recognition as a species, we must not lose sight of the state of things in South Western-Europe, where the var. *bocagii* completely connects the typical *L. muralis* with a mountain form, var. *monticola*, which in all its characters closely approaches *L. chalybdea*.

A fifth variety may be said to connect the var. *breviceps* with *L. derjugini* :—

F. Var. *caucasica* Méhely. Head not strongly depressed. Collar-edge more or less distinctly serrated. Dorsal scales smooth or faintly keeled, larger than tibials, about 40 to 50 across

middle of body, caudals often rather pointed behind. 17 to 25 gular scales. Femoral pores 12 to 17. From snout to vent up to 60 mm. Caucasus.

And, finally,

G. Var. *hieroglyphica* Berthold, with 68 to 71 scales across the body, 21 to 26 femoral pores, 30 to 35 scales under the fourth toe, and reaching a length of 65 mm. from snout to vent, is very closely related to the var. *serpa*, to which it has been referred by Werner, thus standing quite apart from the preceding forms.

So far as I have been able to ascertain, *L. muralis* does not extend into Syria, the specimens so named by Günther, Lortet, and others, belonging to *L. lævis* Gray.

Var. CHALYBDEA.

Lacerta chalybdea Eichwald, Zool. Spec. iii. p. 188 (1831), and Reise Kasp. Meer. i. pt. 2, p. 745 (1837).

Zootoca chalybdea Eichwald, Faun. Casp.-Cauc. p. 73, pl. xi. figs. 1–3 (1841).

Lacerta muralis fusca, var. *saxicola*, part., Bedriaga, Abh. Senck. Ges. xiv. 1886, p. 195.

Lacerta muralis, part., Derjugin, Ann. Mus. Zool. Ac. St. Pétersb. vi. 1901, p. 97; Nikolsky, Herp. Ross. p. 130 (1905).

Lacerta depressa (non Camer.) Werner, Sitzb. Ak. Wien, cxi. i. 1902, p. 1086, pl. iii. figs. 9 & 10.

Lacerta muralis, var. *chalybdea* Bouleng. P. Z. S. 1904, ii. p. 337.

Lacerta saxicola, subsp. *bithynica* and *armeniaca* Méhely, Ann. Mus. Hung. vii. 1909, p. 537, pl. xxi. fig. 7, and p. 549, pl. xxi. fig. 8.

This name, which has priority over that of *saxicola*, a fact overlooked by Méhely, was applied to a specimen described and figured in 1841 ("*E fusco violacea, æneo-nitens, maculis nigris exiguis adspersa, lateribus obscurius fusco-fasciatus, nigro-maculatis, scuta abdominis exteriora chalybdeata*"); the figure shows a stout form with short limbs (foot not longer than head) and a series of round light spots on the upper border of the dark lateral band. The number of femoral pores is "*circiter* 16." In all respects the description and figure agree with specimens from Ielenovka, Lake Gokscha, 2000 m. altitude, received by the British Museum from the St. Petersburg Museum in 1886, and which are unquestionably identical with Werner's *L. depressa*, from the Bithynian Olympus, near Brussa, 1800 m., as I pointed out in 1884, and as the figures 1 & 2 on Pl. XXII. ought to show, as well as with specimens from Kavkaz, L. Gokscha, which I owe to the kindness of Dr. V. Vávra. Méhely has demurred to this identification and proposed the name *bithynica* for Werner's lizard, of which he has examined three specimens from Brussa, in the Werner Collection, and one from Amasia, in the Hungarian Museum.

Méhely identifies Eichwald's *L. chalybdea* with Kessler's *L. portschinskii*, which is a more slender lizard, with longer foot, with more numerous femoral pores, etc. Nikolsky * has recently pointed out the error of Méhely, and also the fact that he has

* Ann. Mus. Zool. Ac. St. Pétersb. xv. 1910, p. 493. I am grateful to my friend Dr. de Bedriaga for a translation of Nikolsky's paper, published in Russian.

overlooked the original description of Eichwald, which is based on a specimen from the Caucasus ("habitat in Iberia, Somchetia"), not from Tiflis as assumed by Méhely. The allusion to a "collare dentatum" in the original description is not against an identification with the L. Gokscha specimens, as one of these has the collar feebly but distinctly dentate.

The following description is taken from sixteen specimens, particulars of which are first given :—

		1.	2.	3.	4.	5.	6.	7.
Ielenovka, L. Gokscha . .	♂	58	45	28	8	23	15–17	26
„ „ . .	♀	70	45	30	9	25	16–15	27
„ „ . .	„	67	45	29	9	24	15–16	27
„ „ . .	„	66	44	30	10	22	15	26
„ „ . .	„	64	40	30	9	21	16–15	26
„ „ . .	„	60	44	30	10	22	16–15	27
Kavkaz, „ . .	„	57	44	29	10	23	17–15	28
„ „ . .	Hgr.	42	46	28	9	22	16–17	27
Van, Kurdistan	♀	70	53	28	11	29	19–18	27
„ „	„	67	48	29	11	28	19–20	26
„ „	„	65	42	28	9	24	16–15	27
Mesopotamia	♂	68	49	29	10	27	19–20	28
„	„	66	44	29	9	23	16	28
„	♀	75	53	28	9	28	18–19	28
„	„	69	45	29	9	22	16	28
Bithynian Olympus . . .	„	70	50	30	10	28	16–15	24

The third specimen on this list is preserved in the Lataste Collection, and was received from Dr. de Bedriaga. Two of the Mesopotamian specimens and two from Lake Van (Mission Chantre, 1881) are preserved in the Lyons Museum.

Form rather stout, head and body much flattened; limbs short, the hind limb reaching the axil or the elbow of the adpressed fore limb in the male, the wrist or the elbow in the female; foot not or but slightly longer than the head. Head flat above, nearly once and a half as long as broad, its depth equalling the distance between the centre or the posterior border of the eye and the anterior border of the tympanum; snout obtusely pointed.

Rostral not entering the nostril; suture between the nasals very short, or * rostral forming a suture with the frontonasal; a single postnasal; frontal as long as its distance from the end of snout; series of granules between the supraoculars and the supraciliaries usually incomplete (3 to 8) †; interparietal long and narrow, much narrower than the short occipital; parietal usually more or less distinctly emarginate

* In 4 out of the 16 specimens examined.

† Complete in a male from Mesopotamia, and in a female from Lake Van. In a female from Mesopotamia, the suture between the first and second supraciliaries is distinctly oblique.

on the side for the accommodation of a large supratemporal *, which is sometimes in contact with the fourth supraocular and sometimes not; temporal scales granular; masseteric disk usually very large, sometimes moderate or small, sometimes divided into two; tympanic shield large; four upper labials anterior to the subocular †. 21 to 29 scales and granules in a straight line between the symphysis of the chin-shields and the median collar-plate; gular fold usually feebly marked or indistinct; collar-edge entire or feebly serrated; 8 to 11 collar-plates.

Scales on body granular, flat, smooth, equal in size, 40 to 53 across the middle of the body, 25 to 31 corresponding to the length of the head, 3 or 2 and 3 to one ventral plate.

Ventral plates in 6 longitudinal series and 28 to 30 transverse series ‡; the plates of the two median series narrower than the others or equal to the outer. Præanal plate large, bordered by one semicircle of smaller plates, often preceded by a transversely enlarged plate.

Scales on upper surface of tibia smaller than dorsals, smooth or feebly keeled. 15 to 20 femoral pores on each side. 24 to 28 lamellar scales under the fourth toe.

Caudal scales forming alternately longer and shorter whorls, the two median dorsal series more or less distinctly enlarged; scales truncate and diagonal, strongly keeled, especially on the sides, the outline of which is distinctly serrated, though not to the same extent as in the var. *rudis*; 18 to 26 scales in the fourth or fifth whorl behind the postanal granules.

Both sexes are alike in coloration. Back greyish brown or olive-brown, usually separated from the darker brown sides by a series of round white spots, which may be black-edged and ocellar; head and back with small, irregular, often vermicular black markings; sides often with large, light, black-edged ocellar spots. Uniform yellow or yellowish white beneath, the outer row of ventrals blue, or with a series of blue spots, in both sexes. An account of the coloration of fresh specimens is given by Werner.

According to Werner, the male may reach a length of 204 mm., whilst the female does not exceed 175.

The following measurements (in millimetres) are from specimens in the British Museum:—

	Ielenovka.		Bithynian Olympus.	Mesopotamia.	
	♂.	♀.	♀.	♂.	♀.
From end of snout to vent	58	70	70	68	75
„ „ „ fore limb . . .	22	22	22	23	25
Length of head	13	14	15	14	15
Width of head	9	9	10	9	10
Depth of head	6	6	6	6	6
Fore limb	21	21	20	21	22
Hind limb	30	30	29	31	30
Foot	15	16	15	16	16

* Hardly at all in one of the Ielenovka specimens, which is here figured.

† 5 in one specimen from Ienelovka. ‡ 26 to 32, *fide* Werner.

As stated above, examples of this variety are referred by Méhely to two subspecies of *L. saxicola*, which are thus differentiated in the key on p. 492.

Limbs long, hind limb of ♂ reaching shoulder or collar, of female wrist or middle of fore arm; 41–45 scales across middle of body, not larger towards the belly, 3 corresponding to one ventral plate; gular scales 20–23; 4 rows of small shields under the thigh; femoral pores 14–18.	Subsp. *armeniaca*.
Limbs short, hind limb of ♂ reaching only the elbow or the axil; 47–51 scales across middle of body, distinctly larger towards the belly, 2 or 3 corresponding to one ventral plate; gular scales 25–29; 5 or 6 rows of small shields under the thigh; femoral pores 16–19	Subsp. *bithynica*.

The only male specimen from Ielenovka (*armeniaca* Méhely) at my disposal could not be determined by means of this synopsis, as it falls in the second division as regards the length of the hind limb, and in the first as regards the number of dorsal and gular scales. There is nothing distinctive in the character of the scales near the belly, and although it is true the female from the Bithynian Olympus (*bithynica* Méhely) differs from the specimens from Ielenovka in having 4 instead of 3 series of small shields between the large femoral shields and the pores * as well as a slightly greater number of dorsal and gular scales, these characters are too slight to justify the establishment of a variety, and besides they are found to break down if put to the test of larger series than Méhely had the privilege of examining. The same author mentions and figures a single specimen in which the first supraocular is in contact with the frontal. Such an exception I have never met with either in this variety or in any of the forms which I united under *Lacerta muralis*, with the single exception of a specimen from Elizabethpol (var. *saxicola*) in which it occurs on one side only †.

The var. *valentini* Boettger, Ber. Senck. Ges. 1892, p. 145 (*L. saxicola*, subsp. *valentini* Méhely, *l. c.* p. 543, pl. xxi. fig. 6), does not appear to be separable from var. *chalybdea*. 42 to 48 scales across the body, 19 to 21 femoral pores. Back green, with black spots and vermiculations. From snout to vent 75 mm. Karabagh and Armenia.

Var. SAXICOLA.

Lacerta saxicola Eversmann, Nouv. Mém. Soc. Nat. Mosc. iii. 1834, p. 349, pl. xxx. fig. 1; Nikolsky, Ann. Mus. Zool. Ac. St. Pétersb. xv. 1910, p. 490; Lehrs, Festschr. R. Hertwig, ii. pl. xiv. fig. 8 (1910).

Lacerta grammica (non Licht.) Rathke, Mém. Sav. Etr. Ac. St. Pétersb. iii. 1837, p. 303.

Lacerta taurica, part., de Filippi, Arch. p. la Zool. Anat. Fis. ii. 1863, p. 386.

* These series of scales vary from 3 to 5 in the Mesopotamian specimens.

† Yet Méhely (Ann. Mus. Hung. viii. 1910, p. 223) gives "Frontale . . . . öfters an das erste Supraoculare anstossend" as one of the features characteristic of his Archæolacertæ.

Podarcis depressa, part., Camerano, Atti Acc. Tor. xiii. 1878, p. 539.

Lacerta muralis fusca, var. *saxicola*, part., Bedriaga, Abh. Senck. Ges. xiv. 1886, p. 195.

Lacerta depressa, var. *modesta* Bedriaga, t. c. p. 272; Bouleng. Cat. Liz. iii. p. 34 (1887); Boettg. Ber. Senck. Ges. 1889, p. 204; Steind. Ann. Hofmus. Wien, xx. 1907, p. 308.

Lacerta muralis Köppen, Beitr. Russ. R. (2) vi. p. 63 (1883).

Lacerta muralis, var. *depressa*, part., Boettg. Ber. Senck. Ges. 1892, p. 141; Méhely, in Zicky, Dritte Asiat. Forschungsr. ii. Zool. p. 54 (1901); Derjugin, Ann. Mus. Zool. Ac. St. Pétersb. vi. 1901, p. 97; Nikolsky, Herp. Ross. p. 136 (1905).

Lacerta muralis, var. *defilippii* (non Camer.) Boettg. t. c. p. 144.

Lacerta muralis, part., Nikolsky, op. cit. p. 130.

Lacerta muralis, var. *depressa* Bouleng. P. Z. S. 1904, ii. p. 333, pl. xxii. fig. *a*.

Lacerta saxicola, f. *typica* Méhely, Ann. Mus. Hung. vii. 1909, p. 495, pl. xviii. figs. 4, 5, 6, 8.

Lacerta saxicola, var. *defilippii*, part., Méhely, t. c. p. 519, pl. xviii. figs. 1–3.

A female from the Belaja R. (affluent of Kuban R.) in Ciscaucasia (Pl. XXII. fig. 4), agrees well with the diagnosis given by Eversmann (*L. supra latitudine capitis prasina, nigromaculata, lateribus brunnea, nigro-maculata, subtus margaritacea versus latera cœrulescens, rostro acuto, capite depresso; cauda longissima, scutellis argute carinatis annulata*), and also with the figure which accompanies his description. I have, therefore, no doubt as to the correctness of the identification.

A specimen from the South Coast of the Crimea, received alive from Mr. A. Brauner, and which agrees in all essential points with the above, was grass-green above, blackish brown on the sides; head, limbs, and tail golden brown; turquoise-blue spots above the axil and on the outer ventral shields; pinkish white beneath. A similar specimen from the Crimea is figured on Pl. XXII. fig. 3.

I append particulars of these specimens, and of others which I regard as pertaining to the same variety:—

		1.	2.	3.	4.	5.	6.	7.
Crimea	♂	66	61	25	10	29	20	29
„ (Lataste Coll.)	„	45	64	26	10	28	20	27
„ South Coast	„	66	63	25	10	32	20	27
Belaja R. (Lataste Coll.)	„	51	65	27	10	32	21–20	29
„	♀	60	60	28	11	27	19	28
Shuska, E. Karabagh	♂	62	62	27	9	25	20–19	30
„ „	♀	61	55	29	8	25	18	30
„ „	„	53	53	29	8	25	18	31
Tativ, „	♂	63	60	28	8	29	19–20	31
„ „	♀	45	58	29	9	25	18	30
Migri-Gerusi, Zangezur Distr.	„	48	54	30	9	25	18–19	29
Elizabethpol	„	65	50	29	9	24	16	29
„	„	60	52	29	10	24	17–16	26
„	„	52	54	28	10	23	17–18	27
Rasano, Talysch (Bedriaga Coll.)	♂	64	55	28	9	28	18	28
„ „ „	„	61	56	27	10	24	18	28

		1.	2.	3.	4.	5.	6.	7.
Helenendorf (Bedriaga Coll.) . .	♂	62	52	28	8	27	20–22	31
Katar, Armenia (Lyons Mus.) . .	♀	46	58	29	9	24	21–18	28
Trebizond? (type of *L. depressa*) (Turin Mus.).	♂	68	60	26	11	31	22–21	27
Trebizond? „	„	52	61	25	8	32	18	26
Erdshias Dagh, Asia Minor . . .	„	56	52	24	12	25	19–17	25
Cilician Taurus	„	67	57	28	11	30	19	27

In form similar to the typical *L. muralis*, or rather to the var. *brueggemanni*, but head more depressed as a rule, its depth not exceeding the distance between the centre of the eye and the anterior border of the tympanum; snout as a rule more pointed than in var. *chalybdea* and less than in var. *portschinskii*.

Hind limb reaching the shoulder or the collar in males, the axil, or the elbow of the adpressed fore limb in females; foot longer than the head.

Head-shields as in var. *chalybdea*, but rostral not rarely in contact with the fronto-nasal, granules between the supraoculars and the supraciliaries nearly always forming a complete series, and masseteric disk smaller as a rule *; the supratemporal is usually in contact with the fourth supraocular, but the degree of emargination of the antero-lateral border of the parietal is very variable, some specimens † not differing in this respect from a typical *L. muralis*; frequently five upper labials anterior to the subocular. 23 to 32 ‡ scales and granules between the chin-shields and the collar, which is not serrated and is composed of 8 to 12 plates.

Scales on body granular, round or roundish-hexagonal, smooth or faintly keeled on the posterior part of the back, 50 to 65 § across the middle of the body, 34 to 51 corresponding to the length of the head, 3 or 4 to one ventral plate. Præanal plate bordered by one or two semicircles of smaller plates, sometimes preceded by a transversely enlarged plate.

Scales on upper surface of tibia as large as or a little larger than dorsals, more or less strongly keeled. 16 to 22 ‖ femoral pores on each side. 25 to 31 lamellar scales under the fourth toe.

Caudal scales forming alternately longer and shorter whorls, the two median dorsal series more or less distinctly enlarged; these scales truncate and more or less diagonal, strongly keeled, the outline on the side more or less distinctly serrated, but far less than in var. *rudis*; 22 to 28 scales in the fourth or fifth whorl behind the postanal granules.

Some specimens are green above, others are grey or brown, the variation in this

* Absent in specimens from Rasano and Katar.

† From Shuska and Erdshias Dagh.

‡ Exceptionally 37 according to Méhely.

§ 49 to 67 according to Méhely.

‖ 16 to 25 (usually 18–22) according to Méhely.

respect being comparable to what obtains in *L. muralis* and its var. *brueggemanni* in some parts of Italy. The head and back are spotted, dotted, or vermiculated with black, the larger spots, if arranged with any symmetry, forming two vertebral series, as in the vars. *bocagii* and *monticola*; the sides are often black, with blue or white round spots; larger round white spots usually form a series on each side of the back; some specimens reticulated with black, much as in var. *tiliguerta*. Lower parts white, bluish, or yellowish; blue and black spots on the outer row of ventral plates, at least in the males.

Measurements (in millimetres) :—

	1.	2.	3.	4.	5.	6.
From end of snout to vent	68	66	63	56	60	61
„ „ „ fore limb . . .	28	27	25	23	23	22
Head	17	17	16	15	14	13
Width of head	11	11	10	10	9	8
Depth of head	6	9	7	7	6	6
Fore limb	23	26	25	22	22	20
Hind limb	40	40	36	31	31	30
Foot	20	21	20	18	17	17

1. ♂. Trebizond (type of *L. depressa*, var. *modesta*). 2. ♂. Crimea. 3. ♂. Tativ, E. Karabagh. 4. ♂. Erdshias Dagh, Asia Minor. 5. ♀. Belaje R., Ciscaucasia. 6. ♀. Shuska, E. Karabagh (var. *defilippii* Boettg. nec Camer.).

The largest specimens, ♂ and ♀, examined by Méhely, measure 79 and 80 mm. from snout to vent, tail 150.

The female specimen represented on Pl. XXII. fig. 5, from Shuska, E. Karabagh, was referred by Boettger to the var. *defilippii*. A male from Erdshias Dagh, Asia Minor, is shown on fig. 6.

The vars. *brauneri* Méhely (Ann. Mus. Hung. vii. 1909, p. 509) and *raddei* Boettg. (Ber. Senck. Ges. 1892, p. 142), with which I am only acquainted through the descriptions, appear to connect this form with the var. *defilippii*.

Var. PORTSCHINSKII.

Lacerta taurica, part., de Filippi, Arch. Zool. Anat. Fis. ii. 1863, p. 386.
Podarcis depressa, part., Camerano, Atti Acc. Tor. xiii. 1878, p. 539.
Lacerta portschinskii Kessler, Tr. Soc. Nat. St. Pétersb. viii. 1878, p. 160, pl. i.; Bedriaga, Arch. f. Naturg. 1879, p. 308.
Lacerta muralis, var. *depressa*, part., Bedriaga, t. c. p. 312.
Lacerta muralis, var. *portschinskii* Boulenger, P. Z. S. 1904, ii. p. 337, pl. xxii. fig. 6.
Lacerta muralis, part., Nikolsky, Herp. Ross. p. 136 (1905).
Lacerta saxicola, var. *chalybdea* (non Eichw.) Méhely, Ann. Mus. Hung. vii. 1909, p. 513.
Lacerta saxicola, var. *portschinskii* Nikolsky, Ann. Mus. Zool. Ac. St. Pétersb. xv. 1910, p. 493.

A small, slender form, with very pointed snout. Hind limb reaching the shoulder or the collar in the male, between the wrist and the elbow in the female. Frontonasal as long as broad or a little longer; granules between the supraoculars and supraciliaries forming a complete series; masseteric disk moderate or small, or absent; 4 upper labials anterior to the subocular. Collar even-edged, composed of 7 to 10 small plates; 26 to 31 scales and granules in a straight line between the symphysis of the chin-shields and the median collar-plate. Dorsal scales round and flat, perfectly smooth, 51 to 56 across middle of body, 3 or 4 corresponding to a ventral plate. A transversely enlarged plate in front of the præanal. Scales on upper surface of tibia as large as or smaller than dorsals, feebly keeled. 16 to 21 * femoral pores on each side. 28 or 29 lamellar scales under the fourth toe. Caudal scales strongly keeled.

Greyish or pale yellowish brown above, with small darker markings; a more or less distinct dorso-lateral series of small light spots; lower parts white or yellowish, the outer row of ventrals with blue spots.

Does not exceed a length of 57 mm. from end of snout to vent.

This form, which is known only from the neighbourhood of Tiflis and Elizabethpol, agrees in most respects with the var. *saxicola*. Some of the characters given above are taken from Méhely's description, as I have only examined two specimens, the first of which is one of the types of *L. depressa*, preserved in the Turin Museum, the second being figured on Pl. XXIII. fig. 1.

		1.	2.	3.	4.	5.	6.	7.
Tiflis?	♀	53	54	29	10	31	17–18	26
Elizabethpol . . .	„	53	56	30	8	27	18–17	29

Measurements (in millimetres) :—

	♂.	♀.
From end of snout to vent	53	53
„ „ „ fore limb	18	19
Length of head	11	11
Width of head	7	7
Depth of head	4	5
Fore limb	16	18
Hind limb	24	25
Foot	14	15
Tail	?	112

Kessler gave the length of the type specimen as 46 mm. from snout to vent, tail 101. He regarded the very long tail as distinctive of *L. portschinskii* compared with *L. muralis*.

* 20–22 according to Kessler.

Var. DEFILIPPII.

Lacerta muralis de Filippi, Viagg. in Persia, p. 354 (1865) ; Blanf. Zool. E. Pers. p. 361 (1876).
Podarcis defilippii Camerano, Atti Acc. Tor. xiii. 1877, p. 90, pl. iii. figs. 1–3.
Podarcis depressa, part., Camerano, t. c. 1878, p. 539.
Lacerta muralis fusca, var. *persica* Bedriaga, Abh. Senck. Ges. xiv. 1886, p. 199.
Lacerta muralis, var. *defilippii* Boettg. in Radde, Faun. Flor. Sudw. Casp.-Geb. p. 44 (1886); Bouleng. P. Z. S. 1904, ii. p. 337.
Lacerta saxicola, var. *defilippii* Méhely, Ann. Mus. Hung. vii. 1909, p. 519 (part.), and Zool. Anz. 1910, p. 592.

A small form barely separable from the two preceding. Head often somewhat less depressed, more as in *L. muralis typica*. Hind limb reaching the shoulder or the collar in the males, the wrist or the elbow in the females ; foot considerably longer than the head. As may be seen from the table of measurements, the proportions are the same as in the typical *L. muralis* from Central Europe.

The rostral sometimes enters the nostril, but is always separated from the frontonasal *; the series of granules between the supraoculars and the supraciliaries is complete; the masseteric disk may be large or small, but is often wholly absent; the anterior supratemporal is often in contact with the fourth supraocular and does not always encroach upon the outer border of the parietal (see Pl. XXIII. fig. 2 *a*); occipital usually shorter and broader, sometimes much broader than the interparietal †; four upper labials anterior to the subocular. 22 to 25 scales and granules between the chin-shields and the collar, which is not serrated and is composed of 9 to 11 very small plates ; gular fold very indistinct or absent.

Scales on body granular, round or oval, smooth, equal, 45 to 53 across the middle of the body, 32 to 46 corresponding to the length of the head, 3 or 4 to one ventral plate. Præanal plate bordered by one or two semicircles of small plates.

Scales on upper surface of tibia as large as or smaller than dorsals, feebly keeled. 14 to 20 femoral pores on each side. 24 to 29 lamellar scales under the fourth toe.

Caudal scales differing from those of the preceding varieties in being less strongly keeled, sometimes very feebly; 24 to 32 scales in the fourth or fifth whorl behind the postanal granules.

The coloration of fresh specimens is thus described by Blanford :—"Olive-grey on the back, finely spotted with black, rather darker on the sides, the under parts pale throughout in some individuals, in others (probably males) all the abdomen, breast, throat, and sometimes part of the lower labials, are brick-red, and when this colour is most intense there is a line of pale blue spots on the exterior edge of the outermost ventral scales." I may add that a dorso-lateral series of small light spots is more or less distinct, and that round light spots are usually present on the darker sides.

* One of the specimens collected by Blanford has two superposed postnasals on one side.

† Which may be divided into two, or fused with the occipital.

The following are particulars of the 11 specimens examined:—

		1.	2.	3.	4.	5.	6.	7.
Elburz Mts., N. of Teheran (Blanford) .	♂	57	49	27	10	23	14–15	29
„ „ „ .	„	53	52	26	11	25	16–15	28
„ „ „ .	„	53	45	26	9	23	16–17	28
„ „ „ .	„	53	46	25	10	22	17–20	25
„ „ „ .	♀	52	52	28	10	23	17	28
„ „ „ .	„	50	49	29	11	25	15	24
„ „ „ .	„	45	51	26	10	24	16–18	28
„ „ (Woosnam) .	♂	56	51	24	9	25	17	26
„ „ „ .	„	52	48	26	9	25	17–16	28
Persia (type of var. *persica*)	„	50	53	25	11	22	16–15	29
Tiflis? (type of *L. depressa*)	♀	53	48	28	10	25	16	26

Measurements (in millimetres):—

	♂.	♀.	♂.	♀.
From end of snout to vent	57	56	52	50
„ „ „ fore limb	21	23	19	18
Length of head	14	14	12	11
Width of head	9	9	7·5	7
Depth of head	7	7	5·5	5·5
Fore limb	19	20	15	15
Hind limb	30	30	24	24
Foot	17	17	14	14

The specimen represented on Pl. XXIII. fig. 2 was obtained by Mr. R. B. Woosnam.

Var. RUDIS.

Lacerta depressa, part., Camerano, Atti Acc. Tor. xiii. 1878, p. 539.

Lacerta depressa, var. *rudis* Bedriaga, Abh. Senck. Ges. xiv. 1886, p. 272; Bouleng. Cat. Liz. iii. p. 34 (1887).

Lacerta depressa Boettg. Ber. Senck. Ges. 1889, p. 204.

Lacerta muralis, var. *depressa*, part., Boettg. Ber. Senck. Ges. 1892, p. 140; Derjugin, Ann. Mus. Zool. Ac. St. Pétersb. vi. 1901, p. 99.

Lacerta muralis, var. *rudis* Bouleng. P. Z. S. 1904, ii. p. 337, pl. xxii. fig. *c*.

Lacerta saxicola, subsp. *rudis* Méhely, Ann. Mus. Hung. vii. 1909, p. 529, pl. xviii. fig. 7.

Form rather stout, head and body much flattened; hind limb reaching the shoulder or the collar in the male, the shoulder, the axil or the elbow in the female; foot usually longer than the head. Head once and one third to once and a half as long as broad, its depth equalling the distance between the centre of the eye and the tympanum; snout obtusely pointed.

Rostral not entering the nostril; suture between the nasals very short *; nasal sometimes forming a suture with the anterior loreal; frontal as long as or shorter than its distance from the end of the snout; series of granules between the supraoculars and the supraciliaries usually complete; occipital much shorter, and often broader than the interparietal; parietal more or less distinctly emarginate on the side † for the accommodation of a large supratemporal, which is usually in contact with the upper postocular; temporal scales granular; masseteric and tympanic shields usually large ‡; usually four, sometimes three or five, upper labials anterior to the subocular. 25 to 34 scales and granules in a straight line between the symphysis of the chin-shields and the median collar-plate; gular fold absent or feebly marked; collar-edge entire; 7 to 11 collar-plates.

Scales on body oval or oval-hexagonal, more or less distinctly keeled, somewhat enlarged towards the ventrals, 45 to 52 § across the middle of the body, 35 to 40 corresponding to the length of the head, 3 or 4 or 2 or 3 to one ventral plate.

Ventral plates in 6 longitudinal and 24 to 29 transverse series. Præanal plate large, usually preceded by a transversely enlarged plate.

Scales on upper surface of tibia considerably larger than dorsals and strongly keeled. 15 to 23 (usually 16 to 21) femoral pores on each side. 25 or 26 lamellar scales under the fourth toe.

Upper caudal scales very strongly keeled, those on the sides raised, subtrigonal, almost spinose, truncate behind; the whorls alternately longer and shorter, and the scales of the two median dorsal series of every other whorl much wider than the others. 18 to 26 scales in the fourth whorl behind the postanal granules.

Brown or greyish olive above, darker on the sides, which have round light spots; a dorso-lateral series of round light spots, or ocelli, which may disappear in the adult; back with small dark spots, which often form a double vertebral series; lower parts whitish, with blue spots on the outer row of ventral plates.

Particulars of the five specimens examined:—

		1.	2.	3.	4.	5.	6.	7.
Batum (Bedriaga Coll.)	♂	83	45	25	10	28	21–22	25
Type of var. *rudis*	♀	70	52	28	9	25	17–19	25
„ „ (Turin Mus.) . . .	„	60	51	27	9	25	18	25
Tchorok, Caucasus	„	68	45	25	11	34	18–17	26
Tcherneia Aragdwa (Bedriaga Coll.) .	„	55	50	28	10	27	18–19	25

* Sometimes rostral forming a suture with frontonasal.

† Very indistinctly in the type figured, P. Z. S. 1904, ii. pl. xxii. fig. *c*.

‡ Masseteric shield small in the specimen from Tchoroc and Tcherneia Aragdwa.

§ 46 to 58 according to Méhely.

Measurements (in millimetres):—

	1.	2.	3.	4.	5.
From end of snout to vent	83	70	60	68	55
„ „ „ fore limb . . .	34	27	23	26	18
Length of head	21	16	15	16	13
Width of head	16	11	9	11	8
Depth of head	10	6·5	6	7	5
Fore limb	30	25	20	24	19
Hind limb	42	38	32	37	29
Foot	22	22	17	20	15

The largest specimen examined by Méhely, a female from Batum, measures 87 mm. from snout to vent.

Although one of the most distinct forms of *L. muralis*, the var. *rudis* is, however, connected by intermediate specimens with the var. *saxicola*, as observed by Méhely.

The specimens figured on Pl. XXII. are males from Batum (fig. 7), in Dr. de Bedriaga's Collection, and from Tchorok (fig. 8).

Var. CAUCASICA.

Lacerta muralis, var. *saxicola* (non Eversm.) Kessler, Tr. Soc. Nat. St. Pétersb. viii. 1878, p. 152.
Lacerta muralis, var. *fusca*, f. *praticola*, part., Boettg. Ber. Offenb. Ver. Naturk. 1880, p. 91.
Lacerta saxicola, subsp. *gracilis* Méhely, Ann. Mus. Hung. vii. 1909, p. 555.
Lacerta caucasica Méhely, t. c. p. 560, pl. xxi. figs. 1 & 2; Nikolsky, Ann. Mus. Zool. Ac. St. Pétersb. xv. 1910, p. 495; Lehrs, Festschr. R. Hertwig, ii. p. 234, pl. xiv. figs. 4–6 (1910).

This form, characterised by a distinctly serrated collar, large gular and dorsal scales, and a low number of femoral pores, connects *L. muralis* with *L. derjugini* Nikolsky. I have no hesitation in bestowing on it the name *caucasica* proposed by Méhely, as two of the specimens examined by me, now in Dr. de Bedriaga's Collection, formed part of the series from Mleti, in the Aragwa Valley, Transcaucasia, originally referred by Boettger to *L. praticola*, and since made the types of a new species, one of the characters of which is for the males to have the femoral pores hardly more developed than the females. This is so in the Mleti specimens here described (Pl. XXIII. fig. 3), whilst two males from the summit of Mt. Fatguss, near Vladikaukas (Pl. XXIII. fig. 4), part of a series in the St. Petersburg Museum, referred by Nikolsky to *L. caucasica*, have very strongly developed pores, and would probably have been made the types of a distinct species or subspecies had they been known to Méhely.

In the specimens examined by me the caudal scales are not markedly pointed, and therefore these specimens could not be determined as *L. caucasica* by means of

Méhely's key (p. 426), but the caudal lepidosis agrees with text-figs. *a* and *b* on p. 563 *.

I will first give particulars of the five male and the single female specimens examined by me, the last belonging to the Lyons Museum (Mission Chantre, 1881).

		1.	2.	3.	4.	5.	6.	7.
Mleti	♂	53	41	23	8	19	13–14	29
,,	,,	52	44	25	9	25	17–16	28
Armenia	,,	53	40	25	8	19	15–14	26
Mt. Fatguss	,,	55	46	24	8	23	17–18	27
,,	,,	50	47	24	9	20	15–16	25
Dariel Gorge	♀	54	44	26	8	20	17–18	?

Shape of head and proportions exactly as in the typical form of *L. muralis*; hind limb reaching the shoulder or the collar in the male, the elbow of the adpressed fore limb in the female.

Rostral not touching the nostril, usually separated from the frontonasal †; nasal sometimes forming a suture with the anterior loreal ‡; granules between the supraoculars and the supraciliaries forming a complete or incomplete series, or even reduced to three; occipital much shorter but sometimes broader than the interparietal; antero-lateral notch of parietal present or absent §; anterior supratemporal usually in contact with the fourth supraocular ‖; temporal scales granular ¶, tympanic shield large, masseteric large or moderate; three or four upper labials anterior to the subocular. Gular fold feeble or absent; edge of collar more or less distinctly serrated **.

Dorsal scales round or oval-hexagonal, smooth or faintly keeled, 30 to 42 corresponding to the length of the head, 2 or 3 or 3 or 4 to one ventral plate. Anal plate with one semicircle of small plates. Scales on upper surface of tibia feebly keeled, smaller than dorsals. Caudal scales forming alternately longer and shorter whorls, diagonal, more or less strongly keeled, truncate or obtusely pointed behind, 26 to 30 in the fourth whorl behind the postanal granules.

Brownish or olive above, with paired series of blackish spots, which are crowded on a dark lateral band extending from the temple to the root of the tail; above and below this, a light streak is usually present, the upper of great width in the specimen from Mt. Fatguss; lower parts white or greenish, in spirit; a series of small blue spots on the outer row of ventrals.

* I have specimens of the typical *L. muralis* from Genoa in which the caudal scales are nearly as pointed as in the author's text-fig. *c*.

† Forming a narrow suture with the frontonasal in the specimen from Dariel Gorge.

‡ In one of the specimens from Mleti.

§ In one of the specimens from Mleti.

‖ Not so in the specimen from the Dariel Gorge.

¶ Rather large in the specimen from Armenia.

** Very feebly in one of the specimens from Mleti. The other specimen is here figured (Pl. XXIII. fig. 3).

Measurements (in millimetres):—

	♂. Mleti.	♂. Mt. Fatguss.	♀. Dariel Gorge.
From end of snout to vent	53	55	54
„ „ „ fore limb	20	22	19
Length of head	14	14	13
Width of head	8	9	8
Depth of head	7	7	6
Fore limb	18	19	19
Hind limb	29	29	27
Foot	16	16	15
Tail	105	110	100

In form, scaling, and coloration, this variety has much in common with the Spanish-Portuguese var. *bocagii*, the resemblance being particularly striking if the specimen from Mt. Fatguss be compared with some from the mountains of Portugal. I may add that a male from the Loroya Valley, near Madrid *, has the caudal scales more pointed than in one from Mleti.

In a recent article in Russian, a translation of which I owe to the ever-ready help of my friend Dr. de Bedriaga, Kikolsky accepts Méhely's *L. caucasica* as a species, and points out the following characters as sufficient to separate it from *L. saxicola*, which includes the Asiatic varieties mentioned above:—

Collar denticulate. But he admits that some of his *L. saxicola* have a feebly denticulate collar, and that in numerous examples of *L. caucasica* the character is not particularly well marked, so that he cannot endorse Méhely's expression "grob gezähnelt."

Upper caudal scales pointed behind. This I find to be often very ill-defined, and Méhely himself admits "bei den Stücken von Mleti öfters noch schwach."

Outer ventral plates narrower than the inner. This supposed difference is not borne out by any of my specimens; the outer plates are in fact broader in proportion than in a specimen of *L. saxicola* from the Crimea.

Dorsal scales strongly convex. Not so in the specimen from Mt. Fatguss.

Length of tail usually less than twice the distance from the gular fold to the vent. Both the male specimens of which I give measurements would be exceptional.

Body broader and shorter. This is not borne out by a comparison with certain individuals from the Crimea, Asia Minor, and Persia.

Although they may suffice for the justification of a variety, the characters on which *L. caucasica* rests are too inconstant to warrant specific distinction.

* Mr. Degen has prepared the skull of one of these specimens, and it shows an incomplete ossification of the supraocular region as in *L. caucasica*.

Kessler's description of *L. saxicola*, which he regarded as a variety of *L. muralis*, clearly applies to this form *.

The following features are given as characteristic:—Tail more than twice as long as head and body; collar feebly serrated, of 7 to 9 shields, of which the median is sometimes very broad; dorsal scales somewhat elongate and convex, smooth or with hardly visible traces of keels, 40 to 44 across middle of body; caudal scales much elongate, somewhat pointed behind; 13 to 16 femoral pores. Hind limb reaching nearly the shoulder in males, rarely the elbow in females. Localities: Piatigorsk (Eversmann), Kasbeck, 6400 ft. (Portschinski), between Passanaur and Mleti, Mt. Salavat, near Nucha.

Nikolsky has described a *L. caucasica*, var. *tenuis*, from a single specimen from Lenkoran, distinguished by smaller, more hexagonal scales, smaller scales under the thighs, and tail more than twice as long as head and body.

A small male from Daghestan, Caucasus, received from the late Dr. Radde in 1904 (Pl. XXIII. fig. 5), appears to represent Méhely's var. *gracilis*.

Although the collar is not serrated and the caudal scales can hardly be called pointed, its resemblance to the specimens from Mt. Fatguss is so great that I feel loth to separate it from them, even as a variety, until a larger series of specimens demonstrates the constancy of the characters adduced in favour of the distinction.

		1.	2.	3.	4.	5.	6.	7.
Daghestan . . .	♂	48	41	27	8	22	16–14	29

I could not have determined this lizard by means of Méhely's key, as the hind limb does not extend beyond the axil. I refer it to *L. saxicola gracilis* Méhely, on account of the locality and of its describer's statement that it very closely approaches *L. caucasica*, although placed in a different species. Better than any others, I think, the Caucasian lizards show the fallacy of the modern craze for multiplying species.

Var. HIEROGLYPHICA.

Lacerta hieroglyphica Berthold, Abh. Ges. Götting. i. 1843, p. 54.
Lacerta serpa Werner, Sitzb. Ak. Wien, cxi. i. 1902, p. 1082, pl. i.

A further example of the difficulty of defining races in this polymorphic lizard is offered by the specimens from the islands of the Asiatic coast of the Sea of Marmora, which have been referred by Werner to *L. serpa*. Apart from more strongly diagonal caudal scales, a character which does not seem of great importance, in view of the range of variation ascertained in the typical *L. muralis* of Central Europe, this lizard agrees so closely with specimens from South Italy, that I would have referred them to that form had I not been aware of the distant locality whence it was obtained. It also

* I am indebted to Dr. de Bedriaga for a translation of Kessler's paper, published in Russian.

bears some resemblance to the var. *tiliguerta*. The two female specimens kindly entrusted to me by Dr. Werner show the following size and scaling :—

		1.	2.	3.	4.	5.	6.	7.
Oxia	♀	65	68	29	11	28	22-21	32
Platia	„	62	71	28	9	28	22	30

Head rather strongly depressed, its depth equalling the distance between the centre of the eye and the anterior border of the eye, its length once and a half or once and two-thirds its width ; snout pointed, as long as the postocular part of the head.

The hind limb reaches the shoulder; foot once and one-third or once and two-fifths the length of the head. Tail nearly twice as long as head and body.

Rostral not entering the nostril; postnasal single; frontal nearly as long as its distance from the end of the snout; series of granules between the supraciliaries and the supraoculars incomplete, the first, or first and second supraciliaries in contact with the second supraocular ; parietals once and one third as long as broad, in contact with the upper postocular; occipital a little shorter and a little broader than the interparietal; temporal scales granular, with a moderately large masseteric disk ; tympanic shield distinct; supratemporal shields small (3 to 6); four anterior upper labials in the specimen from Oxia, five in that from Platia.

Collar with even edge ; gular fold distinct.

Dorsal scales very small, roundish, convex, faintly keeled granules ; 3 or 4 correspond to one ventral plate, 42 or 43 to the length of the head. Præanal plate rather small, with 2 or 3 semicircles of small plates; in the specimen from Platia it is followed by a series of granular scales, as sometimes occurs in the var. *serpa* (see Pl. XXI. fig. 5 *b*). Scales on upper surface of tibia feebly keeled, a little smaller than dorsals.

Upper caudal scales moderately keeled, truncate, very diagonal to the keel, 30 or 31 in the fourth whorl behind the postanal granules.

Greyish olive above, uniform or with very faint darker reticulation, white beneath, outer ventral shields bluish grey; a blue, black-edged spot may be present above the axil.

Measurements (in millimetres) :—

From end of snout to vent	65
„ „ „ fore limb	23
Length of head	15
Width of head	9
Depth of head	7
Fore limb	23
Hind limb	39
Foot	20
Tail	128

The specimen from Platia is represented on Pl. XXI. fig. 5.

Dr. Werner mentions having seen quite similar lizards at Pera, near Constantinople, and he was perfectly right in regarding them as an "*olivacea*-Form" of the lizard described by Berthold as *L. hieroglyphica*, from Constantinople. Thanks to the kindness of Prof. Ehlers, I was able to examine Berthold's specimens preserved in the Göttingen Museum, a half-grown male and a very young animal. Apart from the reticulate markings and the proportions, due to the different sex, the agreement with the Marmora Islands specimens is very close.

	1.	2.	3.	4.	5.	6.	7.
♂	48	68	25	11	34	26–24	35

The hind limb reaches a little beyond the collar. The male has 4 anterior upper labials on the right side and 5 on the left, the young has 4 on both sides. 4 or 5 dorsal scales correspond to one ventral plate, 55 to the length of the head; 34 caudal scales in the fourth whorl.

Berthold described his *L. hieroglyphica* as "supra nigra, figuris hieroglyphicis albis notata." Now somewhat bleached, the larger specimens appear olive with a wide-meshed black network, as is frequently the case in the var. *tiliguerta*; the young is also reticulate, but the markings have a tendency to dispose themselves in five longitudinal series, as in some young of var. *serpa*. Lower parts unspotted.

Measurements (in millimetres):—

From end of snout to vent	48
„ „ „ fore limb	21
Length of head	14
Width of head	9
Depth of head	7
Fore limb	20
Hind limb	32
Foot	18
Tail	112

Upper and side views of head of this specimen are given on Pl. XXI. fig. 4.

On my visit to the Florence Museum, I found several specimens labelled as from Cattaro, Dalmatia, which I refer to the same form. No importance can, I think, be attached to the locality, and the fact that the bottle in which they are preserved contains also two specimens of *Lacerta lævis* Gray, makes it probable that they came from Asia. Having, through the courtesy of Prof. Giglio-Tos, obtained the loan of two of these lizards, I have drawn up the following notes on the points in which they disagree with Dr. Werner's specimens:—

	1.	2.	3.	4.	5.	6.	7.
♂	80	69	28	11	29	24–25	35
♀	80	61	30	10	24	21	32

Hind limb reaching the collar in the male. Frontal shorter than its distance from the end of the snout; occipital considerably shorter and broader than the interparietal; masseteric disk small, absent on one side in the male. 34 or 36 caudal scales in the fourth whorl.

Greyish olive above, with a darker vertebral stripe bearing small black spots; sides with round light spots in a dark network.

Measurements (in millimetres):—

	♂.	♀.
From end of snout to vent	80	80
„ „ „ fore limb	30	29
Length of head	20	19
Width of head	13	11
Depth of head	10	9
Fore limb	31	26
Hind limb	49	46
Foot	28	23

In conclusion, considering that even the most distinct and striking forms of this polymorphic lizard are linked with the typical *Lacerta muralis* in such a way as to preclude a precise definition, such as we have a right to claim in dealing with specific entities, I feel bound to adhere to the conception of *Lacerta muralis* in the wide sense in which I have hitherto taken it. I even feel unable to draw up short definitions or a key by which the identification of the numerous forms with which we are now acquainted could be ensured in a satisfactory manner.

A geographical arrangement therefore appears to me the best to follow for the present * :—

A. Central and Southern Europe.

1. f. *typica*, i. pp. 352, 360, 376; ii. pp. 137, 142, 147, 161.

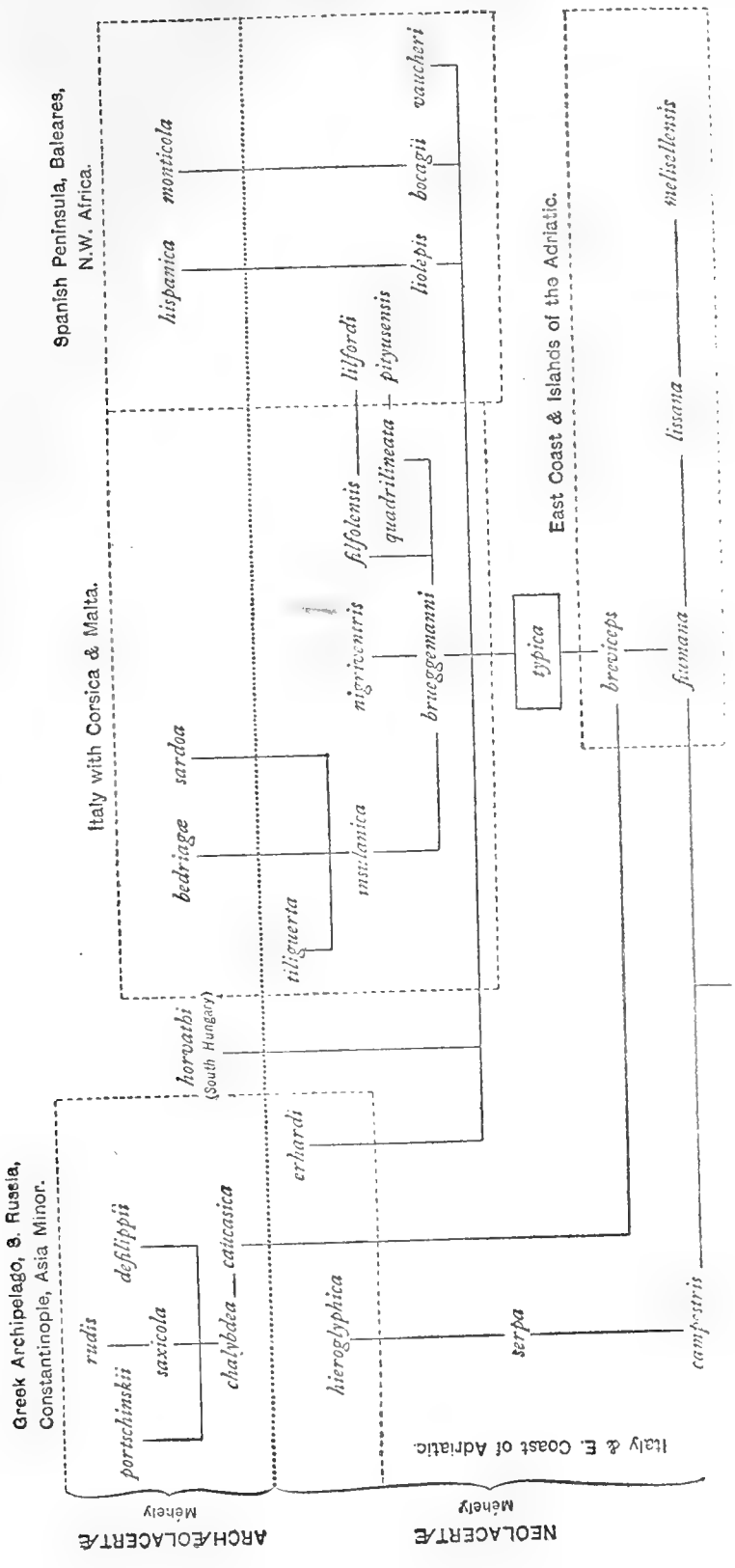
B. Spain and Portugal and N.W. Africa.

2. v. *bocagii* Seoane, i. pp. 361, 415; ii. p. 144.
3. v. *vaucheri* Blgr. i. pp. 365, 418.
4. v. *monticola* Blgr. i. p. 365; ii. p. 145.
5. v. *liolepis* Blgr. i. p. 363.
6. v. *hispanica* Stdr. i. p. 368.
7. v. *pityusensis* Boscá, i. p. 370.
8. v. *lilfordi* Gthr. i. p. 372.

C. Italy and East Coast of the Adriatic.

9. v. *campestris* De Betta, i. pp. 390, 405; ii. p. 178.
10. v. *serpa* Raf. i. p. 394; ii. pp. 148, 155, 180.

* This list will also serve as an index to the contents of this (ii.) and the previous (i.) contribution in the Transactions.


Spanish Peninsula, Baleares, N.W. Africa.
Italy with Corsica & Malta.
East Coast & Islands of the Adriatic.
Greek Archipelago, S. Russia, Constantinople, Asia Minor.
Italy & E. Coast of Adriatic.
hispanica
monticola
bocagii
vaucheri
liolepis
lilfordi
pityusensis
filfolensis
quadrilineata
nigriventris
brueggemanni
typica
breviceps
fiumana
lissana
melisellensis
bedriagæ
sardoa
tiliguerta
insulanica
horvathi
(South Hungary)
erhardi
hieroglyphica
serpa
campestris
rudis
defilippii
saxicola
portschinskii
chalybdea
caucasica
Ménely
ARCHÆOLACERTÆ
Ménely
NEOLACERTÆ

D. Italy, with Corsica and Malta.

11. v. *brueggemanni* Bedr. i. p. 380 ; ii. p. 148.
12. v. *nigriventris* Bp. i. p. 384.
13. v. *insulanica* Bedr. ii. p. 148.
14. v. *tiliguerta* Savi, i. pp. 408, 419 ; ii. p. 157.
15. v. *bedriagæ* Camer. i. p. 411.
16. v. *sardoa* Peracca, i. p. 413 ; ii. p. 154.
17. v. *quadrilineata* Gray, i. pp. 405, 419 ; ii. p. 153.
18. v. *filfolensis* Bedr. i. p. 401 ; ii. p. 158.

E. Southern Europe east of the Adriatic, minus S. Russia and Constantinople.

19. v. *breviceps* Blgr. i. p. 378 ; ii. p. 164.
20. v. *horvathi* Méh. ii. p. 165.
21. v. *fiumana* Wern. ii. p. 167.
22. v. *lissana* Wern. ii. p. 172.
23. v. *melisellensis* Braun, ii. p. 174.
24. v. *erhardi* Bedr. ii. p. 182.

F. Southern Russia, Constantinople, Asia Minor, Persia.

25. v. *hieroglyphica* Berth. ii. p. 201.
26. v. *chalybdea* Eichw. ii. 187.
27. v. *saxicola* Eversm. ii. p. 190.
28. v. *portschinskii* Kessl. ii. p. 193.
29. v. *defilippii* Camer. ii. p. 195.
30. v. *rudis* Bedr. ii. p. 196.
31. v. *caucasica* Méh. ii. p. 198.

A linear arrangement of the forms of *L. muralis* is, of course, an impossibility. The preceding diagram (p. 205) expresses their affinities, as I conceive them, and also their distribution *. It will also enable the reader to see at a glance how my views on the possible derivation of these forms differ from those advocated by Prof. Méhely †.

List of Specimens in the British Museum.

Forma TYPICA.

1. ♀.	Jersey.	G. Hornell, Esq.
2–6. ♂, ♀, & yg.	Great Chausey Isle, Normandy.	M. H. Gadeau de Kerville.
7–10. ♂ ♀.	Near St. Malo.	G. A. Boulenger, Esq.
11–16. ♂ ♀.	St Lunaire, Ille-et-Vilaine.	E. G. Boulenger, Esq.
17. ♂.	„	J. Pollen, Esq.
18–19. ♂ ♀.	Pempet Isle, Glenan Islands, Brittany.	Prof. A. Giard.

* Except in the case of the typical form, which has a more general distribution.

† The var. *hispanica* was regarded as an Archæolacerta by Méhely in 1907 ; however, no further allusion is made to it in his paper of 1909.

20. ♂.	Achard, near Bordeaux.	E. Britten, Esq.
21–29. ♂, ♀, & yg.	Eaux-bonnes, Pyrenees.	M. F. Lataste.
30–31. ♂.	Riou Isle, near Marseilles.	M. M. Mourgue.
32–41. ♂ ♀.	Near Dinant, Belgium.	G. A. Boulenger, Esq.
42–51. ♂, ♀, & yg.	Denée, Prov. Namur, Belgium.	M. A. van Delft.
52–54. ♂, ♀, & yg.	Odilienberg, C. Vosges, 2680 ft.	G. A. Boulenger, Esq.
55. ♀.	Lower Ahr, Rhineland.	W. F. Kirby, Esq.
56–57. ♂.	Close to Bies Glacier, near Randa, Valais, 6500 ft.	C. L. Boulenger, Esq.
58–59. ♂ ♀.	Baden, near Vienna.	Dr. F. Werner.
60. ♂.	Miesenbach, near Vienna.	,,
61–64. ♂ ♀.	Vöslau, ,, ,,	,,
65–66. ♂ ♀.	Herkulesbad, Hungary.	Prof. L. v. Méhely.
67. ♂.	Bazias, S. Hungary.	Dr. F. Werner.
68–71. ♂ ♀.	Bozen, S. Tyrol.	Hr. A. Mulser.
72–75. ♂ & yg.	Courmayeur, Aosta Valley, Piedmont.	Turin Museum.
76–80. ♂, ♀, & yg.	Domodossola, Piedmont.	,,
81. ♂.	Lanzo Valley, ,,	,,
82–92. ♂ ♀.	Turin.	,,
93. ♀.	Portofino, near Rapallo.	,,
94–98. ♂ ♀.	Genoa.	Dr. R. Gestro.
99–100. ♂.	Florence.	Florence Museum.
101. ♀.	Brozzi, near Florence.	Dr. A. Banchi.
102–103. ♂ ♀.	Ferriere, Apennines.	Prof. G. B. Howes.
104–106. ♂ & yg.	Bosco d'Umbra, Monte Gargano (in beech woods).	Prof. O. Neumann.
107–108. ♂ & yg.	Barcelona.	O. Thomas & R. I. Pocock, Esqs.
109. ♂ (type of var. *rasquineti*).	La Deva, Arnao.	Dr. J. de Bedriaga.
110–143. ♂, ♀, & yg.	Silos, Burgos.	Rev. S. Gonzales.
144–158. ♂, ♀, & yg.	Castrillo de la Reina, Burgos.	,,
159–160. ♂ ♀.	Corunna.	M. V. L. Seoane.
161–180. ♂, ♀, & yg.	Loroya Valley, near Madrid, 3200–4800 ft.	M. de la Escalera.
181–182. ♂.	St. Peter, near Grafensbrunn, Carniola.	Hr. F. Henkel.
183. ♂.	Travnik, Bosnia.	Dr. F. Werner.
184. ♀.	Livno, ,,	,,
185–187. ♂ ♀.	Bosnia.	Hr. C. Flöricke.
188–189. ♂.	Teteven, Bulgaria.	Dr. F. Werner.
190. ♂.	Rutschuk, ,,	M. Kowatscheff.
191. ♂.	Panagiuriste, Bulgaria.	,,
192. Yg.	Korito, Herzegovina, 3300 ft.	Dr. F. Werner.
193. ♂.	L. Stymphalos, N. Morea.	Norman Douglass, Esq.

Var. BOCAGII.

1. ♀ (type).	Corunna.	M. V. L. Seoane.
2–5. ♂ ♀.	Galicia.	Miss Bucks.
6–10. ♂ ♀.	Burbia, Sierra de Pico.	Dr. H. Gadow.
11–13. ♂, ♀, & yg.	Escorial, Madrid.	Madrid Museum.
14–20. ♂ ♀.	Loroya Valley, near Madrid, 3200–4800 ft.	M. de la Escalera.
21. ♀.	Los Morismos, Andalucia.	Dr. H. Gadow.
22–23. ♀ & yg.	Oporto.	,,
24–27. ♂ & yg.	Murça, Tras os Montes.	,,
28–33. ♂ ♀.	Serra de Gerez.	,,
34. Yg.	Cintra.	Col. Yerbury.
35–38. ♂ ♀.	Near Lisbon.	Dr. H. O. Forbes.
39–48. ♂ ♀.	Fenzou, Atlas of Morocco.	Hr. Riggenbach.
49–68. ♂, ♀, & yg.	Tamaruth Valley, Atlas of Morocco.	,,
69–73. ♂ ♀.	Tlemsen, Oran.	Dr. J. Anderson.

Var. VAUCHERI.

1. ♂.	Salir, Algarve, Portugal.	Dr. H. Gadow.
2–7. ♂ ♀ (types).	Tangier.	M. H. Vaucher.

Var. MONTICOLA.

1–2. ♀.	Burbia, Sierra de Pico.	Dr. H. Gadow.
3. ♀ (type).	Spain.	Madrid Museum.
4. ♀ (type).	Serra Estrella.	Dr. H. Gadow.

Var. LIOLEPIS.

1–3. ♂ (types).	Valencia, Spain.	Lord Lilford.
4–19. ♂, ♀, & yg. (types).	,, ,,	Prof. E. Boscá.
20–29. ♂ ♀ (types).	,, ,,	Madrid Museum.
30–37. ♂, ♀, & yg. (types).	Foyos, near Valencia.	,,
38–40. ♂ ♀.	Seville.	Prof. Calderon.

Var. HISPANICA.

1–2. Yg.	Almeria, Spain.	Senckenberg Museum.
3. Hgr.	Spain.	Madrid Museum.

Var. PITYUSENSIS.

1–8. ♂ ♀ (types).	Iviza, Baleares.	Prof. E. Boscá.
9–18. ♂, ♀, & yg.	,,	Madrid Museum.

Var. LILFORDI.

1. ♂ (type of var. *gigliolii*).	Dragoneras I., Majorca.	Dr. J. de Bedriaga.
2–5. ♂ ♀.	La Guardia I., Majorca.	Prof. E. Boscá.
6. ♂.	Minorca.	Dr. J. de Bedriaga.
7–9. ♂ ♀.	Mahon, Minorca.	M. J. Ferrer.
10–11. ♂.	I. del Rey, „	„
12–15. ♂ ♀ (types).	I. del Ayre, Minorca.	Lord Lilford.
16–18. ♂ ♀.	„ „	M. J. Ferrer.

Var. CAMPESTRIS.

1. ♀.	Venice.	Dr. F. Werner.
2–16. ♂, ♀, & yg.	Turin.	Turin Museum.
17–19. ♂ ♀.	Bologna.	Prof. J. J. Bianconi.
20–24. ♂ ♀.	Florence.	Dr. J. de Bedriaga.
25–27. ♂ ♀.	„	Florence Museum.
28. ♂.	Ancona.	Count M. G. Peracca.
29–30. ♂ ♀.	Perugia.	„
31–34. ♂ ♀.	Lake Trasimene, Perugia.	„
35. ♂. (type of var. *livornensis*).	Calambrone, Livorno.	Dr. J. de Bedriaga.
36–38. ♂ ♀.	Rome.	Dr. F. Werner.
39–44. ♂ ♀.	Castelfranco, Ostia.	Dr. L. W. Sambon.
45. ♂.	Elba.	W. C. Trevelyan, Esq.
46. ♀.	Corsica.	M. A. Dollfus.
47–48. ♂.	Trieste.	G. A. Boulenger, Esq.
49. ♂.	Pola, Istria.	Dr. F. Werner.
50. ♀.	Lussin Id., Istria.	„
51–54. ♂ ♀.	Sansego Id., „	„
55–60. ♂ ♀.	Zara, Dalmatia.	„
61–62. ♂.	„ „	Hr. Spada-Novak.

Var. SERPA.

1–10. ♂ ♀.	Monte Gargano.	Prof. O. Neumann.
11–13. ♂ ♀.	Rome.	W. C. Trevelyan, Esq.
14. ♂.	Montecristo Id.	„
15. Yg.	Giglio Id.	Florence Museum.
16–17. ♂.	Gianutri Id.	„
18–23. ♂, ♀, & yg.	Pompeii.	„
24–28. ♂ ♀.	„	E. Noble Smith, Esq.
29–30. ♂ ♀.	Ponza Id.	Florence Museum.
31. ♂ (type of var. *latastii*).	„	Dr. J. de Bedriaga.
32–33. ♂ ♀.	Vendotena Id.	Florence Museum.

34. ♀.	S. Stefano Id.	Florence Museum.
35. ♀.	Ischia Id.	,,
36–37. ♂.	Vivara Id.	F. Robin, Esq.
38–41. ♂ ♀.	Procida Id.	,,
42. ♂.	Casamicciola Id.	,,
43. ♀ (type of *L. faraglionensis*).	Faraglione Rock, near Capri.	Dr. J. de Bedriaga.
44. ♂.	Faraglione.	Sir E. Ray Lankester.
45–48. ♂ ♀.	,,	Hr. A. Mulser.
49–51. ♂ ♀.	Reggio, Calabria.	Florence Museum.
52–54. ♂ ♀.	Lipari Id.	,,
55. ♀.	Stromboli Id.	,,
56–57. ♂ ♀.	Catania.	,,
58. ♂.	Palermo.	Count M. G. Peracca.
59–61. ♂ ♀.	Bosco di Marineo, Palermo.	Hr. L. Müller.
62–73. ♂ ♀.	Monte Cuccio, near Palermo.	Prof. O. Neumann.
74. ♂.	Arbe Id., Istria.	Dr. F. Werner.
75–76. ♂.	Zara, Dalmatia.	Hr. Spada-Novak.
77–79. ♂.	Cazza Id., near Lissa.	Prof. Kolombatovič.
80. ♂.	Pelagosa Id., ,,	,,
81–85. ♂, ♀, & yg.	,,	Dr. F. Werner.

Var. BRUEGGEMANNI.

1–13. ♂ ♀.	Genoa.	Dr. R. Gestro.
14–16. ♂ ♀.	Sestra Ponente, near Genoa.	Turin Museum.
17–18. ♂ ♀.	Rapallo.	Dr. W. Wolterstorff.
19–22. ♂ ♀.	Portofino, near Rapallo.	Turin Museum.
23. ♂ (type).	Spezia.	Dr. J. de Bedriaga.
24–29. ♂, ♀, & yg.	Lerici, near Spezia.	Bryan Hook, Esq.
30–31. ♂.	Bologna.	Dr. F. Werner.
32. ♂.	Near Florence.	M. G de Southoff.
33. ♂.	,, ,,	Dr. J. de Bedriaga.
34–39. ♂ ♀.	Bagni di Ripoli, near Florence.	Dr. A. Banchi.
40–42. ♂.	Tuscany.	Zoological Society.

Var. NIGRIVENTRIS.

1. ♂ (type of var. *flaviundata*).	Rome.	Dr. J. de Bedriaga.
2–8. ♂ ♀.	,,	Rev. G. Fournier.
9–17. ♂, ♀, & yg.	,,	Prof. D. Vinciguerra.
18. ♂.	Roman Campagna.	Prof. R. Collett.
19. ♀.	Castelfranco, Ostia.	Dr. L. W. Sambon.
20. ♂.	Italy.	,,

Var. INSULANICA.

1. ♂.	Pianosa Id., near Elba.	Prof. L. Camerano.
2–9. ♂ ♀.	„	Count M. G. Peracca.

Var. TILIGUERTA.

1–6. ♂ ♀.	Cagliari.	Florence Museum.
7. ♂.	Assemini, near Cagliari.	Count M. G. Peracca.
8–12. ♂ ♀.	S. Sardinia.	„
13–14. ♂.	Sardinia.	Dr. F. Werner.
15–17. ♂ & yg.	Messina.	Florence Museum.
18–22. ♂ ♀.	„	Count M. G. Peracca.
23–27. ♂ ♀.	Tarmina.	Prof. O. Neumann.
28. ♂.	Catania.	Florence Museum.
29–36. ♂ ♀.	„	Count M. G. Peracca.
37. ♂.	Siracusa.	Florence Museum.
38–41. ♂ ♀.	Modica.	„
42–43. ♂ ♀.	Palermo.	Dr. F. Werner.
44–45. ♂ ♀.	Monte Cuccio, near Palermo.	Prof. O. Neumann.
46–48. ♂ ♀.	Kamma, Pantellaria Id.	Dr. J. de Bedriaga.
49. ♂.	Minorca.	Hr. L. Müller.

Var. BEDRIAGÆ.

1–2. ♂ ♀.	Bastelica.	Dr. J. de Bedriaga.
3. ♂.	Tinozzo.	Florence Museum.
4. ♂.	Corsica.	Dr. J. de Bedriaga.
5–6. ♂ & hgr.	„	G. A. Boulenger, Esq.

Var. SARDOA.

1–3. ♀.	Mt. Gennargentu.	Sig. G. Meloni.

Var. QUADRILINEATA.

1–7. ♂, ♀, & yg.	Ajaccio.	Basle Museum.
8–11. ♂ ♀.	Corte.	Florence Museum.
12–14. ♂ ♀.	„	Dr. Forsyth Major.
15. ♂ (type of var. *corsica*).	Orezza.	Dr. J. de Bedriaga.
16–17. ♂ ♀.	Corsica.	M. A. Dollfus.
18–20. ♀ (types).	Sardinia.	Rev. W. Hennah.
21–22. ♂ & yg.	Cagliari.	Florence Museum.
23–25. ♂ ♀.	„	Count M. G. Peracca.
26–32. ♂ ♀.	Flumini di Quarto, Sardinia.	„
33–36. ♂ ♀.	Lanusia, Sardinia.	Hr. L. Müller.
37. ♀.	Ghilazzo, „	Dr. J. de Bedriaga.
38–57. ♂, ♀, & yg.	Latzorbí, Urzulei-Ogliastra Mts., Sardinia, 3900 ft.	Sig. G. Meloni.

Var. FILFOLENSIS.

1–3. ♂ ♀.	Malta.	J. Ritchie, Esq.
4–7. ♂ & yg.	,,	A. A. Tollemache, Esq.
8–9. ♀.	,,	Florence Museum.
10–23. ♂, ♀, & yg.	,,	Capt. H. Lynes.
24. ♂.	,,	Mrs. F. H. Pollen.
25–28. ♂ ♀.	,,	Mr. M. G. Despott.
29–37. ♂, ♀, & yg.	Rocky Island near mouth of St. Paul's Bay, Malta.	Capt. H. Lynes.
38–39. ♂ (types).	Filfola Rock, near Malta.	A. A. Tollemache, Esq.
40–49. ♂ ♀.	,,	Norman Douglass, Esq.
50–64. ♂ ♀.	,,	Mr. M. G. Despott.
65. ♀.	Linosa.	Florence Museum.
66–72. ♂ ♀.	,,	Dr. J. de Bedriaga.

Var. BREVICEPS.

1. ♂ (type).	Italy?	Prof. F. S. Monticelli.
2. ♀.	Babaplanina, Herzegovina, 4550 ft.	Dr. F. Werner.

Var. HORVATHI.

1. ♂ (type).	Jasenak, Croatia.	Prof. L. v. Méhely.
2. ♀.	,, ,,	,,
3. ♀.	Kapela Range, Croatia.	Dr. F. Werner.

Var. FIUMANA.

1–2. ♂ ♀.	Trieste.	Dr. F. Werner.
3–5. ♂ & yg. (types).	Fiume, Istria.	,,
6. ♂.	Cherso Id., Istria.	,,
7–10. ♂ ♀.	Istria.	Hr. A. Mulser.
11–12. ♀.	Dalmatia.	Hr. Spada-Novak.
13–15. ♂ ♀.	Solta Id., Dalmatia.	Dr. F. Werner.
16. ♂.	Brazza Id., ,,	Dr. J. de Bedriaga.
17. ♂.	Bol, Brazza Id., Dalmatia.	Dr. F. Werner.
18. ♂.	Meleda Id., ,,	,,
19. ♂.	Scaglio Supetar, ,,	,,
20–22. ♂, ♀, & yg.	Bosnia.	Hr. C. Floericke.
23–25. ♂ ♀.	Capljina, Herzegovina.	Hr. Irebitzky.
26–27. ♂ ♀.	Bukovici, ,,	Dr. F. Werner.
28–29. ♂ ♀.	Brestica, ,,	,,
30–34. ♂.	Trebinje, ,,	,,

Var. LISSANA.

1–3. ♂ ♀ (types).	Lissa Id., Dalmatia.	Dr. F. Werner.
4–5. ♂.	Lissa.	M. G. de Southoff.
6. ♂.	Glavati, Lagosta Id., Dalmatia.	Dr. F. Werner.

Var. MELISELLENSIS.

1–3. ♂ ♀ (types).	Melisello Id., near Lissa.	Dr. F. Steindachner.
4–5. ♂.	„	Dr. F. Werner.
6–9. ♂ ♀.	„	Hr. Spada-Novak.
10–13. ♂.	„	Prof. Kolombatovic.
14–15. ♂.	„	Hr. L. Müller.
16. ♂ (type of var. *galvagnii*).	Scoglio Kannik, W. of St. Andrea, near Lissa.	Dr. F. Werner.

Var. ERHARDI.

1. ♂.	Petali, near Eubœa.	Dr. J. de Bedriaga.
2. ♂.	Tenos, Cyclades.	„
3–4. ♂ ♀.	Mykonos, „	Hr. L. Müller.
5. ♂.	Syra, „	„
6–12. ♂ ♀ (types of var. *naxensis*).	Naxos, Cyclades.	Dr. F. Werner.
13–16. ♂ ♀.	Santorini, „	Hr. L. Müller.
17–18. ♂ (types of var. *milensis*).	Milos, „	Dr. J. de Bedriaga.
19–20. ♂ ♀.	Erimomilo, Cyclades.	Dr. F. Werner.

Var. CHALYBDEA.

1–5. ♂ ♀.	Ielenovka, L. Gokscha.	St. Petersburg Museum.
6–7. ♀ & yg.	Kavkaz, „	Dr. V. Vávra.
8. ♀.	Van, Kurdistan.	Lyons Museum.
9–10. ♂ ♀.	Mesopotamia.	„
11. ♀.	Bithynian Olympus, 4850 ft.	Dr. F. Werner.

Var. SAXICOLA.

1. ♂.	Crimea.	St. Petersburg Museum.
2. ♂.	S. Coast of Crimea.	Mr. A. Brauner.
3. ♀.	Belaja R., affluent of Kuban R.	St. Petersburg Museum.
4–6. ♂ ♀.	Shuska, E. Karabagh.	Senckenberg Museum.
7–8. ♂ & yg.	Tativ, „	„
9. ♀.	Migri-Gerusi, Caucasus.	Tiflis Museum.
10–14. ♂, ♀, & yg.	Elizabethpol.	St. Petersburg Museum.
15. ♂ (type of *L. depressa*, var. *modesta*).	Trebizond.	Turin Museum.
16. ♂.	Erdshias Dagh, Asia Minor.	Hr. Martin Holz.
17. ♂.	Cilician Taurus.	„

Var. PORTSCHINSKII.

1. ♀.	Elizabethpol.	St. Petersburg Museum.

Var. DEFILIPPII.

1–8. ♂ ♀.	Elburz Mts., N. of Teheran.	W. T. Blanford, Esq.
9–10. ♂.	„ 7000 ft.	R. B. Woosnam, Esq.

Var. RUDIS.

1. ♀ (type).	Trebizond (?).	Dr. J. de Bedriaga.
2. ♀.	Tchorok, Caucasus.	Tiflis Museum.

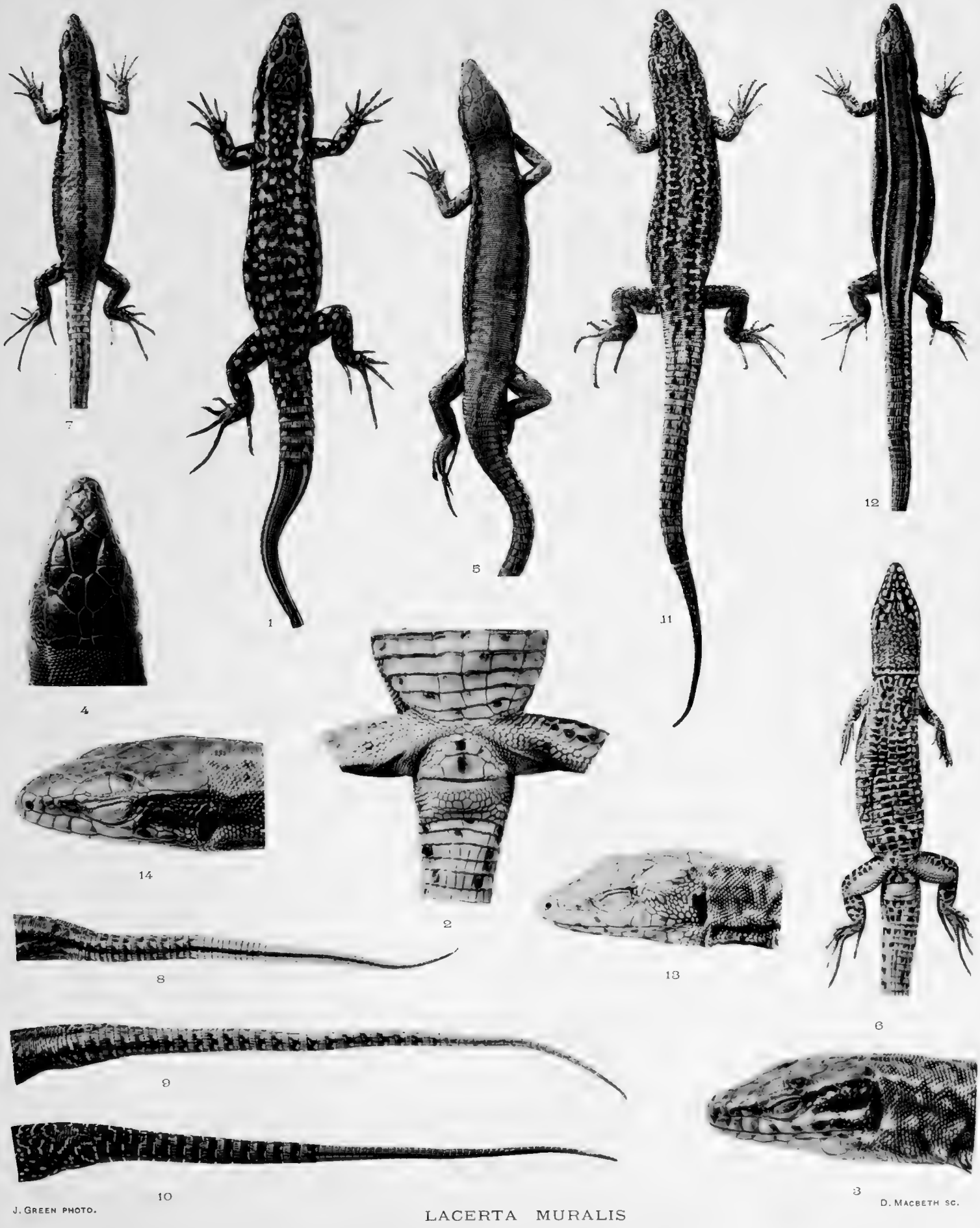
Var. CAUCASICA.

1. ♂.	Armenia.	St. Petersburg Museum.
2–3. ♂.	Mt. Fatguss, Vladikaukas, Caucasus.	„
4. ♂.	Daghestan, Caucasus.	Tiflis Museum.

PLATE XVI.

PLATE XVI.

Fig. 1. Forma *typica*, ♂. St. Lunaire, near St. Malo (p. 140). Natural size.
2. ,, ,, ♀. St. Lunaire (p. 140). Anal region. × 2.
3. ,, ,, ♂. Achard, near Bordeaux (p. 141). Side view of head. × 3.
4. ,, ,, ♂. Vöslau, near Vienna (p. 138). Upper view of head. × 3.
5. ,, ,, ♂. L. Stymphalos, N. Morea (p. 163). Natural size.
6. ,, ,, ♂. Bosnia (p. 162). Lower view. Natural size.
7. ,, ,, ♀. Bosnia (p. 162). Natural size.
8. ,, ,, ♀. Livno, Bosnia (p. 142). Tail, natural size.
9. ,, ,, ♂. Bosnia (p. 142). ,, ,,
10. Var. *nigriventris*, ♂. Rome (p. 142). ,, ,,
11. Var. *bocagii*, ♂. Loroya Valley, near Madrid (p. 144). Natural size.
12. ,, ,, ♀. Loroya Valley (p. 144). Natural size.
13. ,, ,, ♂. Coimbra (p. 145). Side view of head. × 3.
14. Var. *monticola*, ♀. Burbia, Asturias (p. 146). Side view of head. × 3.



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LACERTA MURALIS

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PLATE XVII.

PLATE XVII.

Fig. 1. Var. *brueggemanni*, ♂. Tuscany (p. 148). Natural size.
1 *a*. „ „ „ „ Lower view.
2. „ „ „ „ Side view of head. × 2.
3. „ „ ♂. Florence (p. 148). Natural size.
4. „ „ ♀. Ripoli, near Florence (p. 148). Natural size.
4 *a*. „ „ „ „ Lower view.
5. „ „ ♂. „ Side view of head. × $2\frac{1}{2}$.
6. Var. *filfolensis*, ♂. Malta (p. 158). Natural size.
7. „ „ ♂. Rocky Island near Malta (p. 159). Natural size.
8. „ „ ♀. Filfola Rock, „ „ (p. 160). Natural size.

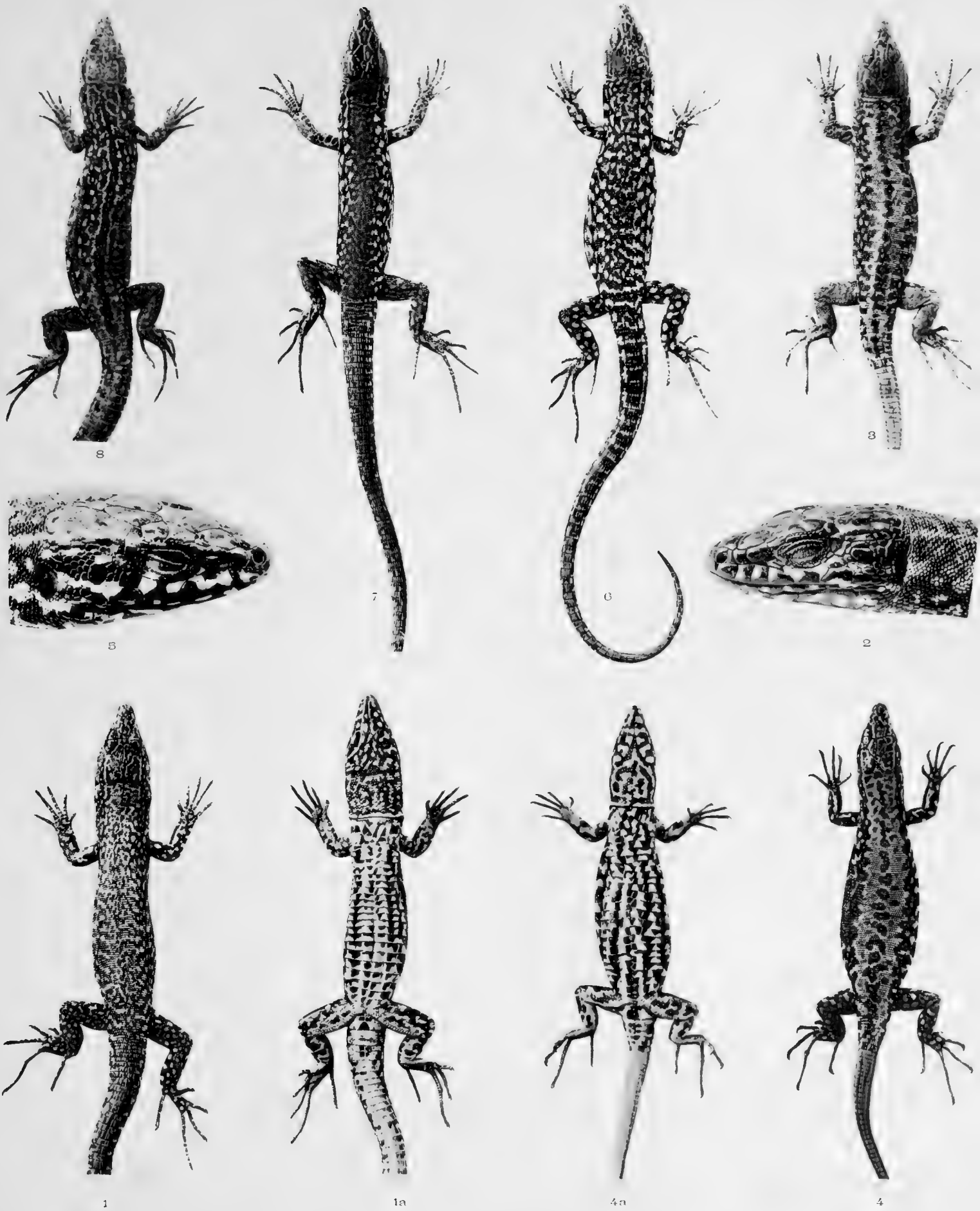

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PLATE XVIII.

PLATE XVIII.

Fig. 1. Var. *insulanica*, ♂ (one of the types). Pianosa (p. 150). Natural size.
1*a*. ,, ,, ,, Side view of head. × $2\frac{1}{2}$.
2. ,, ,, ♂. Pianosa (p. 150). Natural size, lower view.
3. ,, ,, ♂. Scuola di Pianosa (p. 150). Natural size.
3*a*. ,, ,, ,, ,, Side view of head. × $2\frac{1}{2}$.
4. Var. *filfolensis*, ♂. Linosa (p. 160). Natural size.
5. ,, ,, ♂. ,, Natural size, lower view.
6. ,, ,, ♀. ,, Natural size.
7. Var. *tiliguerta*, ♂. Monte Cuccio, Palermo (p. 157). Natural size.
8. Var. *bedriagæ*, ♂. Bastelica, Corsica (p. 157). Natural size.

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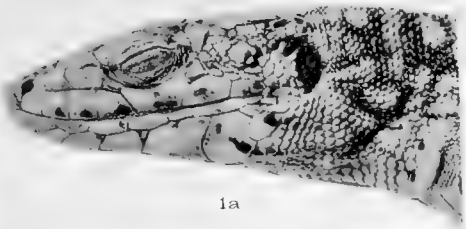
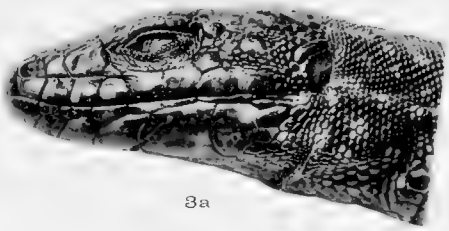


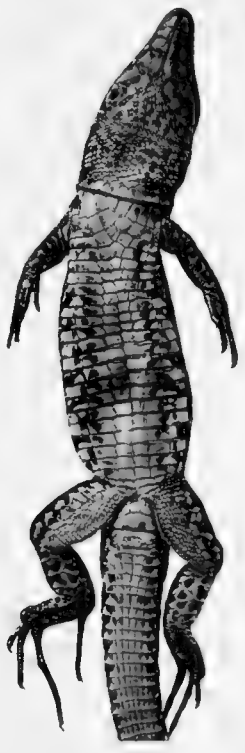
1a



3a

3

1



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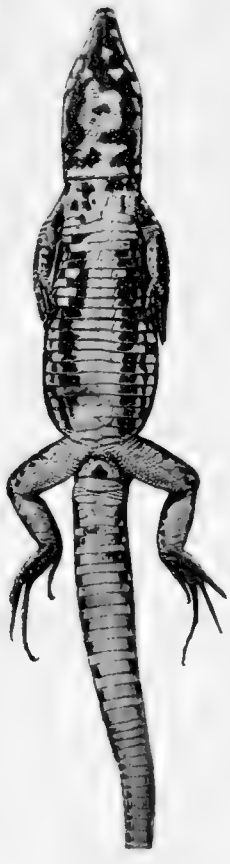

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PLATE XIX.

PLATE XIX.

Fig. 1. Var. *fiumana*, ♂ (one of the types). Fiume (p. 171). Natural size.
2. „ „ ♂. Trieste (p. 171). Natural size.
3. „ „ ♀. „ Natural size.
4. „ „ ♂. Bukovici, Herzegovina (p. 172). Natural size.
4 *a*. „ „ „ „ Upper view of head.
5. „ „ ♂. Istria (p. 171).
6. „ „ ♂. Capljina, Herzegovina (p. 172). Upper view of head. $\times 2\frac{1}{2}$.
6 *a*. „ „ „ Capljina. Side view of head. $\times 2\frac{1}{2}$.
7. „ „ ♀. Bosnia (p. 172). Side view of head. $\times 2\frac{1}{2}$.
8. Var. *lissana*, ♂ (one of the types). Lissa (p. 173). Natural size.
9. „ „ ♂. Glavati, Lagosta (p. 173). Natural size.
10. Var. *melisellensis*, ♂. Melisello, near Lissa (p. 175). Natural size.
10 *a*. „ „ „ „ Lower view.
10 *b*. „ „ „ „ Upper view of head. $\times 2$.
11. „ „ ♂ (type of var. *galvagnii*). Scoglio Kamik, near Lissa (p. 177). Natural size.

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6a

4a

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PLATE XX.

PLATE XX.

Fig. 1. Var. *horvathi*, ♂ (one of the types). Jasenak, Croatia (p. 165). Natural size.
1 *a*. „ „ „ Upper surface of head. × 2½.
2. „ „ ♀. Jasenak. Natural size.
3. Var. *campestris*, ♂. Pola, Istria (p. 178). Natural size.
4. „ „ ♀. Sansego Id., Istria (p. 178). Natural size.
5. „ „ ♂. „ „ (p. 178). Side view of head. × 2½.
6. Var. *serpa*, ♂. Zara, Dalmatia (p. 180). Natural size.
7. „ „ ♂. Pelagosa Grande (p. 180). Natural size.
8. „ „ ♀. „ „ (p. 180). Natural size.
9. „ „ ♂ (one of the types of var. *adriatica*). Pelagosa Piccola (p. 180). Natural size.

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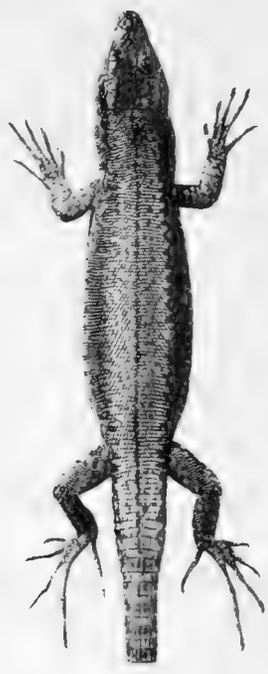

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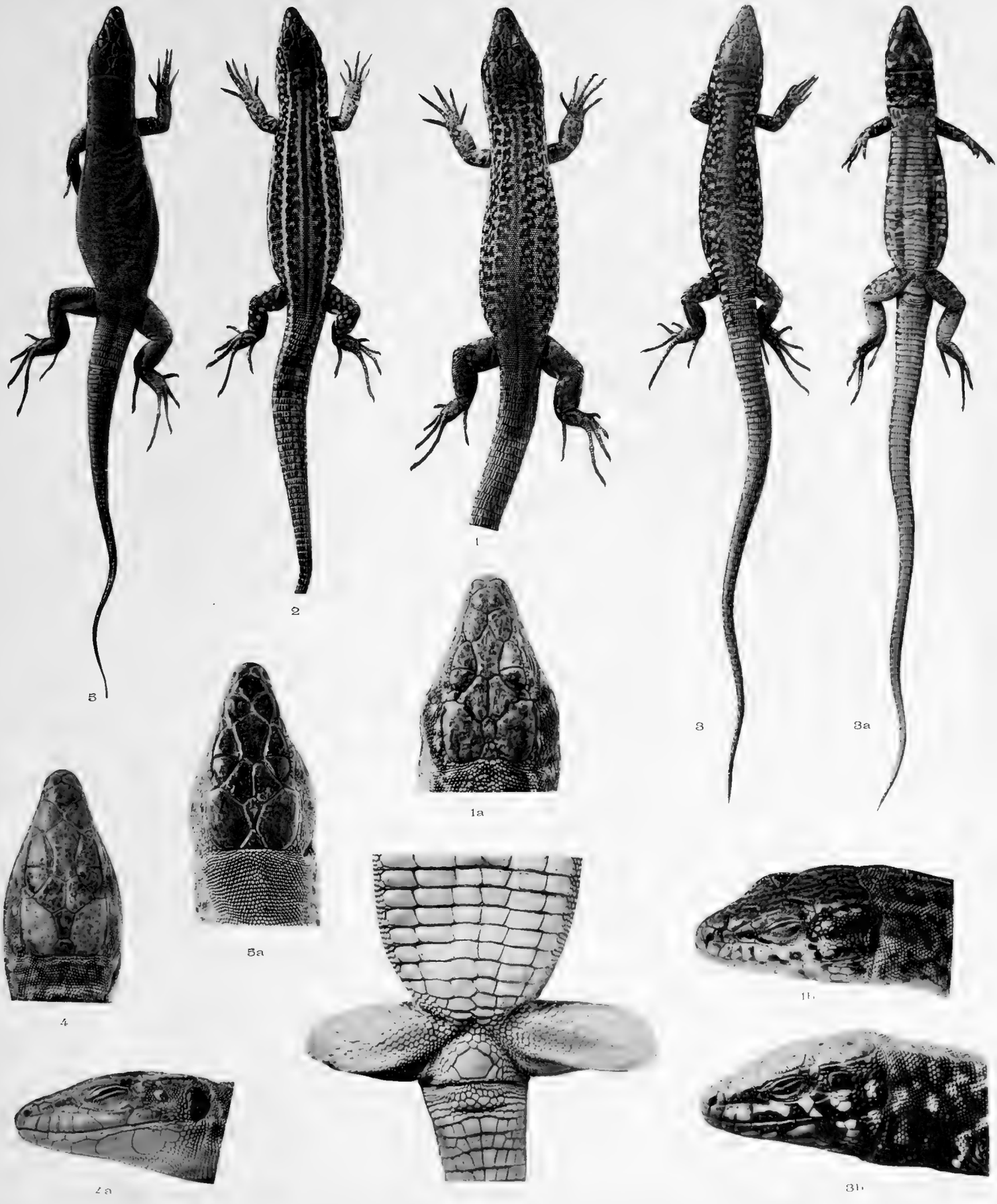
PLATE XXI.

PLATE XXI.

Fig. 1. Var. *erhardi*, ♂. Mykonos, Cyclades (p. 183). Natural size.
1 *a*. „ „ „ „ Upper view of head. × 2.
1 *b*. „ „ „ „ Side view of head. × 2.
2. „ „ ♀. „ Natural size.
3. „ „ ♂ (type of var. *milensis*). Milos, Cyclades (p. 183). Natural size.
3 *a*. „ „ „ „ „ Lower view. Natural size.
3 *b*. „ „ „ „ „ Side view of head. ×2½.
4. Var. *hieroglyphica*, ♂ (type). Constantinople (p. 202). Upper view of head. ×4.
4 *a*. „ „ „ „ „ Side view of head. ×4.
5. „ „ ♀. Platia, Asia Minor (p. 202). Natural size.
5 *a*. „ „ „ „ Upper view of head. ×2½.
5 *b*. „ „ „ „ Anal region. ×2½.



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LACERTA MURALIS

PLATE XXII.

PLATE XXII.

Fig. 1. Var. *chalybdea*, ♀. Bithynian Olympus (p. 188). Natural size.
2. „ „ ♀. Ielenoka, L. Gokscha (p. 188). Natural size.
3. „ *saxicola*, ♂. Crimea (p. 191). Natural size.
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5. „ „ ♀. Shuska, Karabagh (p. 191). Natural size.
6. „ „ ♂. Erdshias Dagh, Asia Minor (p. 192). Natural size.
7. Var. *rudis*, ♂. Batum (p. 197). Natural size.
7 *a*. „ „ „ „ Side view of head. ×2.
8. „ „ ♂. Tchorok, Caucasus (p. 197). Natural size.

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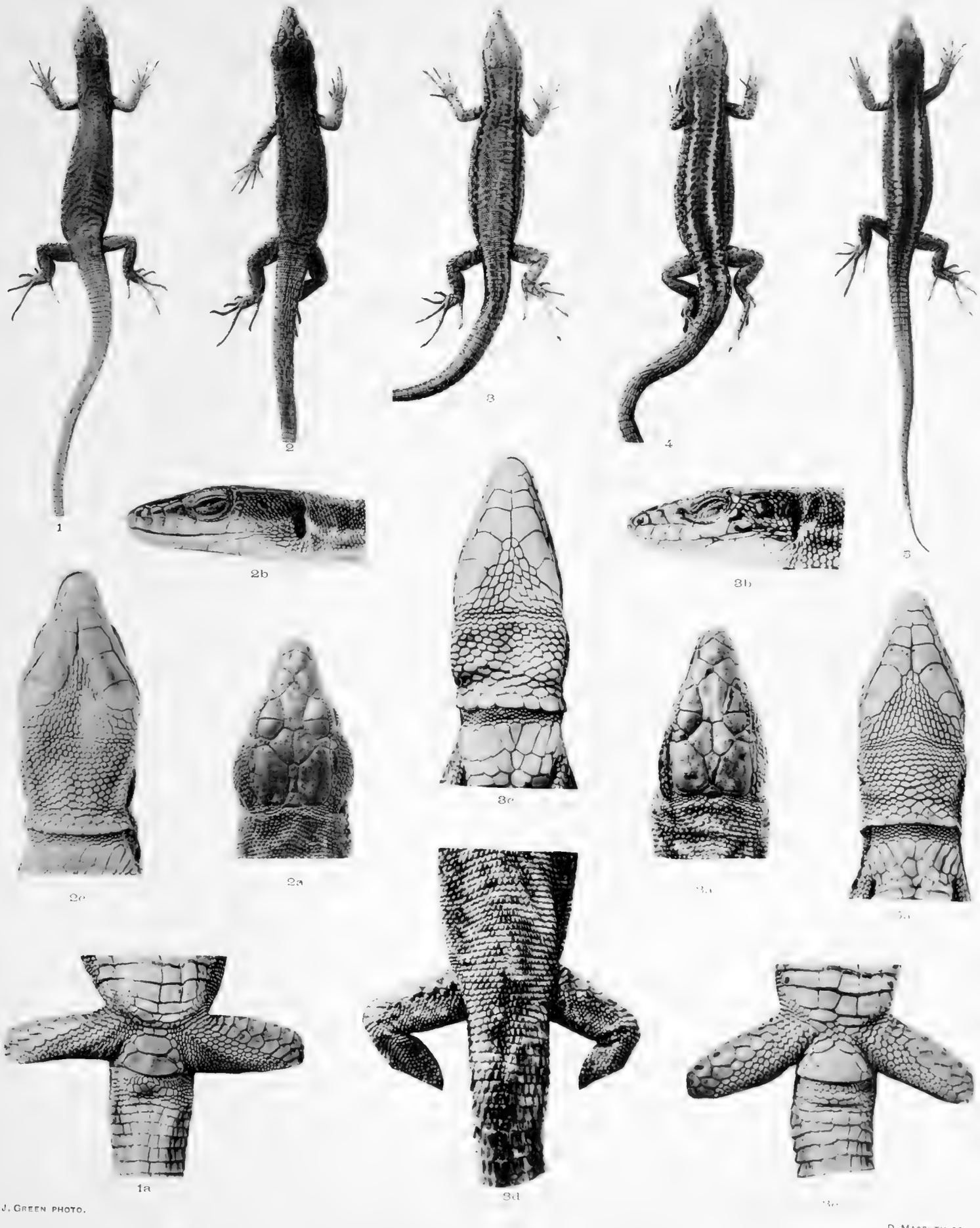
PLATE XXIII.

PLATE XXIII.

Fig. 1. Var. *portschinskii*, ♀. Elizabethpol (p. 194). Natural size.
1 *a*. „ „ „ „ Anal region. ×3.
2. Var. *defilippii*, ♂. Mazanderan, Persia (p. 196). Natural size.
2 *a*. „ „ „ „ Upper view of head. ×2½.
2 *b*. „ „ „ „ Side view of head. ×2½.
2 *c*. „ „ „ „ Lower view of head. ×2½.
3. Var. *caucasica*, ♂. Mleti, Caucasus (p. 199). Natural size.
3 *a*. „ „ „ „ Upper view of head. ×2½.
3 *b*. „ „ „ „ Side view of head. ×2½.
3 *c*. „ „ „ „ Lower view of head. ×2½.
3 *d*. „ „ „ „ Posterior part of body and base of tail. ×2½.
3 *e*. „ „ „ „ Anal region. ×2½.
4. „ „ „ Mt. Fatguss, Vladikaukas (p. 199). Natural size.
5. „ „ „ Daghestan, Caucasus (p. 201). Natural size.
5 *a*. „ „ „ „ Lower view of head. ×3.



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